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II.—SPECIAL SERIES: No. 3.

SILK.

PUBLISHED BY ORDER OF

The Inspector General of Customs.

SHANGHAI:

STATISTICAL DEPARTMENT

OF THE

INSPECTORATE GENERAL.

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SILK.

Circular No. 103: Second Series.

Inspectorate General of Customs,
Peking, 10*th May* 1880.

SIR,

1.—The production and manufacture of Silks in China are subjects on which it is desirable to obtain further information. The President of one of the Juries at the Paris Exhibition, Mr. Natalis Rondot, representing the Chamber of Commerce at Lyons, addressed me in this connection, requesting me to institute inquiries and communicate their result; but since my return to China too many other more pressing affairs have demanded attention, and it is only now that I find myself able to take the action asked for.

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Circular 103.

2.—I append copies of two letters received from Mr. Rondot, together with a set of queries and an extract from a former report. These documents are detailed enough to show the main object of the inquiry, and direct attention to the chief points on which information is desired. I have only, therefore, to request you to peruse them carefully, and, that done, proceed with the inquiry. In addition to answering each question *seriatim* in the set of queries, you will please to do what you can to elucidate certain points raised in the letters, which I have directed the Statistical Department to print in italics. You will send me your report before the end of October.

1, 2, 3, and 4.

3.—As regards the specimens to be provided, it will be well for the three Northern Ports, the Yangtze, Chêhkiang, and Shanghai ports, the Fukien ports, and the Kwangtung ports respectively to act in communication, so that duplicates may be

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excluded and funds economised. Mr. RONDOT estimates the expenditure at about two thousand francs, and perhaps that amount may suffice; but I now authorise the $\frac{\text{first}}{\text{Tientsin}}$, $\frac{\text{third}}{\text{Foochow}}$, and $\frac{\text{fourth}}{\text{Canton}}$ divisions of ports to spend, each division, a sum not exceeding five hundred taels, and the $\frac{\text{second}}{\text{Shanghai}}$ division a sum not exceeding one thousand taels, the expenditure to appear as an advance in the *A* Accounts of the September quarter. The reports are to be sent to me; the specimens, in duplicate, ready packed and numbered, are to be sent, one set to me, the other to the Statistical Department, to be stored there and transmitted eventually to Mr. RONDOT.

I am,

SIR,

Your obedient Servant,

ROBERT HART,

Inspector General.

To

THE COMMISSIONERS OF CUSTOMS.

No. 1.

SILK.

CIRCULAR 103.

GRAND HÔTEL DU LOUVRE,
PARIS, *le* 20 *Juin* 1878.

MONSIEUR L'INSPECTEUR GÉNÉRAL,

J'AI l'honneur de vous adresser le rapport que j'ai fait, à la suite de l'Exposition Universelle de Vienne, sur l'industrie de la soie. J'ai parlé dans ce travail de la production des soies et des tissus de soie en Chine. Mais, comme je ne m'étais pas préparé à écrire une étude sur cette grande industrie, je n'ai pas pu donner à mon rapport les développements, surtout au point de vue technique, que le sujet comportait.

La Chambre de Commerce de Lyon vient de m'inviter à entreprendre de nouveau ce travail, dont elle a ordonné par avance la publication.

Je commence pour être en mesure d'accomplir cette tâche, à réunir des matériaux qui prendrait place auprès des appréciations résultant de l'examen des produits de chaque pays exposés au Champ de Mars ou présentés sur les marchés.

J'ai l'honneur de vous prier, Monsieur l'Inspecteur Général, de me donner votre aide pour ce qui est de l'industrie chinoise.

Vous disposez de moyens d'information sûrs et étendus, et, si vous le voulez bien, je pourrais tracer un tableau plus exact de l'importance de la production des soies et de la production des tissus et des rubans de soie en Chine.

Tout ce qui a été écrit jusqu'à présent sur cette production est peu exact, et l'aperçu que j'ai donné dans mon rapport laisse beaucoup à désirer.

Il serait très intéressant d'avoir des nouvelles données sur ce point, et très certainement si l'attention du service des Douanes était dirigée de ce côté, on aurait bientôt des renseignements qui permettraient d'établir une meilleure statistique de la production chinoise.

On est bien près d'avoir trouvé des procédés qui auront pour résultat un emploi plus régulier et plus important des soies provenant *des vers sauvages; la connaissance de ce qui se rapporte à ces soies serait utile.*

J'ose espérer, Monsieur l'Inspecteur Général, que vous ne me refuserez pas votre concours, et je vous serais très obligé si vous vouliez bien me communiquer les documents et les informations qui seraient de nature à me faire mieux connaître l'industrie chinoise des soies et des soieries.

Je vous prie d'agréer, Monsieur l'Inspecteur Général, l'assurance de ma haute considération.

(signé) NATALIS RONDOT,
Président du Jury pour l'Industrie de la Soie,
Délégué de la Chambre de Commerce de Lyon.

À

MONSIEUR ROBERT HART,
etc., etc., etc.

SILK. No. 2.

CIRCULAR 103.

CHÂTEAU DE CHAMBLON, PRÈS D'YVERDON,
SUISSE, *le* 9 *Février* 1879.

MONSIEUR LE DIRECTEUR GÉNÉRAL,

JE me suis proposé d'exposer l'état de l'industrie de la soie dans tous les pays à l'époque de l'Exposition Universelle en 1878, et je désire donner à la partie de mon travail qui sera consacrée à la Chine des développements en rapport avec l'importance que l'industrie de la soie y a toujours eue.

Quelque nombreux que soient les matériaux que j'ai recueillis déjà et ceux que j'obtiens régulièrement des grandes maisons de commerce de Lyon et de Londres, ces renseignements sont peu variés et insuffisants; les faits portent seulement sur les produits qui forment l'objet des importations ordinaires.

Ce que j'ai appris en Chine, ce que les missionnaires m'ont indiqué à plusieurs reprises me donne à penser qu'il serait possible de réunir des faits différents, dont l'intérêt au point de vue scientifique et l'utilité au point de vue industriel ne sont pas douteux.

L'administration des Douanes Impériales Maritimes est certainement la mieux placée pour recueillir des faits de cet ordre, non seulement par l'action directe qu'elle exerce dans les ports, mais par les moyens d'information que lui assurent ses rapports avec les marchands chinois. J'ai essayé, à la suite de l'Exposition Universelle de Vienne de tracer une statistique de la production de la soie en Chine. Cet essai est, je le sais, inexact en plus d'un point, mais dans des études de ce genre l'exactitude absolue est toujours impossible à obtenir. L'essentiel est de donner une idée suffisamment nette de l'état des choses.

Avec votre concours, Monsieur le Directeur Général, ce premier essai pourrait être notablement amélioré.

Il serait à désirer surtout que l'on pût connaître mieux en Europe *les ressources que la Chine offre en produits que le commerce a négligés jusqu'à présent.* Je veux parler des soies provenant des vers à soie dits sauvages: vers des mûriers sauvages, vers du chêne, vers du ricin, de l'ailante, du camphrier, etc. Le gouvernement de l'Inde a entrepris dans cette direction des recherches qui ont été conduites avec une grande intelligence, et il est très probable que la Chine est aussi riche que l'Inde en soies de cette sorte.

Enfin il serait très intéressant de connaître les étoffes de soie qui sont fabriquées en Chine; les unes peuvent devenir l'objet d'une importation en Europe, les autres peuvent nous fournir des spécimens de tissures nouvelles.

Cet ensemble de renseignements profiterait à toute l'industrie, puisque le travail que je prépare sera publié par la Chambre de Commerce de Lyon, et les échantillons dont j'aurai fait usage dans le cours de mon étude prendront place dans le Musée d'Art et d'Industrie de Lyon.

J'ai l'honneur de faire appel en cette circonstance à votre obligeance, Monsieur le Directeur Général, et de vous prier de me donner votre appui. J'ai préparé un questionnaire assez court, qui est accompagné de la statistique que j'ai publiée en 1875.

Je vous serais très-reconnaissant si vous vouliez bien inviter les fonctionnaires dépendant de votre administration de répondre à mes questions autant que cela sera en leur pouvoir, *et de joindre à leurs réponses de petits échantillons de cocons, de soies ou de tissus.*

Quant à ces échantillons ils peuvent être très-petits, en quelque sorte sans valeur. Ce que je désire, c'est de pouvoir déterminer avec précision la nature du produit (cocons, soie, tissu, ruban) et pour cela un petit échantillon sera suffisant.

Si tel ou tel de ces échantillons présente un intérêt particulier, il sera possible plus tard, je l'espère, de le procurer par les voies du commerce les quantités nécessaires pour les étudier plus complètement.

Quoique dans de telles conditions ces échantillons ne doivent représenter qu'un prix d'achat modique, la Chambre de Commerce de Lyon m'a chargé de vous prier de lui permettre d'en payer le prix; elle suppose qu'un crédit de deux mille francs permettra de couvrir cette dépense éventuelle.

J'espère que vous voudrez bien, Monsieur le Directeur Général, accueillir favorablement ma demande, et je vous prie d'agréer l'assurance de ma haute considération.

(signé) NATALIS RONDOT,

Délégué de la Chambre de Commerce de Lyon.

No. 3.

CHAMBRE DE COMMERCE DE LYON.

Some Queries on the Production and Manufacture of Silks in China.

1°.—What kind of Raw Silk is produced—

1°, in the province where your office is situated?

2°, in the provinces or districts where there is no port open to Foreign Trade, but with which the province mentioned above holds commercial intercourse?

2°.—What are the names given to the various kinds of Raw Silk (Tsatlee, Taysaam, etc.)?

3°.—What is the average production of the Raw Silk given—

1°, by the worms fed with mulberry leaves?

2°, by the worms fed with ailanthus leaves?

3°, by the worms (two species) fed with oak-tree leaves, or on oak trees?

4°, by the wild worms fed on mulberry trees?

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4°.—It is said Silk is obtained—

1°, from the cocoon of a large worm (Attams Atlas ?) living in the Lo-fou Hills (Kwangtung);

2°, from the reticular cocoon of a worm fed on the camphor tree.

If the statement is true, what are the names of these Silks? what quantity produced? what use of them?

5°.—How many, where, have establishments where foreign machinery is used to reel Silk been started in China?

6°.—How many, where, do native establishments to make Thrown Silks exist in China?

7°.—How many, where, do Silk-weaving looms exist in China?

8°.—What is the probable production in each province—

1°, of Thrown Silk?

2°, of Silk Piece Goods?

9°.—Has the Taiping insurrection done any harm to the quality of Silk manufactures? Have the old establishments been restored at the same places, or have they been transferred elsewhere?

10°.—What are the places where Silk manufactures for the Imperial Court and rich families are made at the present time?

11°.—What are the Silk goods of a manufacture special to China or little known in Europe? I shall mention, for instance, goods (Crapes particularly) made of a mixture of mulberry and oak-tree worms' Silks, Damasked Gauzes, Velvets worked with gold, large-grain Camlets made of Silk and Cashmere, Brocades for ladies' dresses, Silks made of oak-tree Silk or of ailanthus-tree Silk, the figured tissue made on a vertical loom called Khesse, Ribbons, etc.

If possible, send a sample, however small, of each Silk manufacture, with a label showing its Chinese name, the meaning of the name, the place of production, the use of it, the nature of the primitive material, the price of it (giving the sizes), etc.

Appended to these questions are some statistics formerly drawn up by Mr. NATALIS RONDOT, and which may serve as a basis to this inquiry.

No. 4.

PRODUCTION DE LA SOIE EN CHINE.

SOIES DU VER À SOIE DU MÛRIER *(Bombyx mori)*.	PRODUCTION. *Kilog.*
Tsatli, des provinces de Tché-kiang et de Kiang-sou (principalement du Hou-tchéou-fou, des environs de Hou-tchéou-fou, de Ling-hou, de Nan-tsin, de Tsong-ling, dans le Tché-kiang ; du Sou-tchéou-fou[1], du Yang-tchéou-fou et du Kiang-ning-fou, dans le Kiang-sou)	2,880,000
Taysaam, *Wousié*, *Chouhing*, *Liyong*[2], *Skeins* long guindre, etc., des provinces de Tché-kiang, de Kiang-sou et de Ngan-hoeï (principalement du Kia-hing-fou, du Chao-hing-fou et du Hang-tchéou-fou, dans le Tché-kiang ; de Wou-si et de Li-yang, dans le Kiang-sou ; du Tchi-tchéou-fou, dans le Ngan-hoeï)[3]	1,600,000
Hang-tchéou tsatli, du Hang-tchéou-fou, dans le Tché-kiang	110,000
Yuenfa, *Haïning*, etc., des provinces de Tché-kiang, de Ngan-hoeï et de Kiang-si (principalement des environs de Youen-hoa, de Haï-ning, de Haï-yen, de Hang-tchéou-fou, de Kia-hing-fou, dans le Tché-kiang, et du Tchi-tchéou-fou, dans le Ngan-hoeï)	500,000
De la province de Kouang-toung (des arrondissements qui sont les plus rapprochés de Canton, dans un rayon de 40 milles et principalement de l'arrondissement de Chun-ti)[4] . .	1,200,000
Chin-tchéou, etc., de la province de Fo-kien (principalement du Tsiouen-tchéou-fou) . .	30,000
Jaunes, long guindre, des provinces de Kouang-si, de Koueï-tchéou et de Yun-nan . .	70,000
De la province de Chan-toung : principalement du Tsing-tchéou-fou, du Tsi-nan-fou, du Taï-ngan-fou, des arrondissements de Po-chan et de Se-chouï)[5]	110,000
À reporter	6,500,000

[1] Le mot *fou* signifie département : le Sou-tchéou-fou est le département de Sou-tchéou ; Sou-tchéou-fou est la ville capitale du département de Sou-tchéou.

[2] En Chine, ni les cocons ni les procédés de filage ne sont partout les mêmes, et les soies présentent des différences dans la qualité, la finesse ou la couleur, suivant les districts.

La plupart des soies sont connues dans le commerce sous le nom des localités ou des circonscriptions dans lesquelles elles ont été filées.

Ainsi les soies dites *Haïning* et *Yuenfa* ont été filées dans les petites villes de Haï-ning et de Youen-hoa et aux environs (département de Hang-tchéou-fou, province de Tché-kiang) ; les soies *Liyong* ont été filées dans l'arrondissement de Li-yang (département de Tchin-kiang-fou, province de Kiang-sou) ; les soies *Chin-tchéou*, dans le département de Tsiouen-tchéou-fou (province de Fo-kien) ; les soies *Loungkong* et *Loungchan*, dans les villages de Loung-kiang et de Loung-chan (province de Kouang-toung), etc.

Toutefois le nom des soies *tsatli* et *taysaam* a une autre origine.

Tsat-li en dialecte de Canton, *tsi-li* en dialecte de la Cour, signifie "(soie filée à) sept cocons."

Taysaam, ou correctement *ta-tsan*, signifie gros ver, soie tirée de cocons du gros ver à soie ; cette race n'a été pendant longtemps élevée que dans une partie du Tché-kiang, principalement dans le département de Kia-hing-fou.

Les noms de *tsatli* et de *taysaam*, ainsi que ceux de *Yuenfa*, de *Liyong*, etc., n'ont plus, depuis l'accroissement de l'exportation en Europe, une signification aussi restreinte qu'autrefois.

[3] Les soies *skeins* long guindre forment une catégorie particulière des soies *taysaam ;* c'est pour cette raison que nous les avons réunies à ces dernières. Dans plusieurs localités du Kiang-sou, on donne même le nom de *Liyong* indifféremment à des soies long guindre de Li-yang et à des *skeins* proprement dits.

Les *skeins* long guindre sont filés dans les provinces de Tché-kiang, de Ngan-hoeï et de Kiang-sou ; on les tire principalement du Tchi-tchéou-fou et du Ngan-king-fou, dans le Ngan-hoeï, et du Chao-hing-fou, dans le Tché-kiang. Leur production est d'environ 260,000 kilogrammes.

[4] Le consul d'Angleterre à Canton a estimé, en 1873, le produit total annuel des récoltes successives qu'on obtient dans la province de Kouang-toung à 1,500,000 kilogrammes : 1,100,000 kilogrammes seraient exportés et 400,000 seraient consommés dans les fabriques de Canton. Il a été exporté de Canton, en 1872, 1,150,000 kilogrammes de soies gréges et ouvrées. On estime qu'il y arrive 50,000 kilogrammes de soies du Toung-king, qui sont pour la plupart redévidées ; 40,000 kilogrammes du Se-tchouen et 30,000 kilogrammes de Chang-haï.

[5] D'après les rapports de M. A. WILLIAMSON et de M. J. MARCHKAM, dont les voyages dans cette province ont été faits en 1867 et en 1869, la production serait plus considérable.

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		PRODUCTION.
		Kilog.
Report.		6,500,000
Des provinces de Yun-nan, de Hou-péh, de Ho-nan et Chan-si[1]		70,000
De la province de Se-tchouen:—		
Du Kia-ting-fou, du Siu-tchéou-fou, du Kien-tchéou, soies blanches, pour la plupart	*Kilog.* 490,000	
Du Mien-tchéou, du Tse-tcheou, du Pao-ning-fou et du Chun-king-fou, soies jaunes, pour la plupart[2]	450,000	
Du Souï-ting-fou	30,000	
TOTAL[3]	970,000	970,000

SOIES DES VERS À SOIE SAUVAGES DU MÛRIER ET D'AUTRES ARBRES *(Bombyx mori, B. atlas, etc.)*.

Des provinces de Kouang-toung et de Kouang-si. (L'exportation de ces soies, par le port de Canton, a été: de 340,000 kilogrammes en 1866; de 395,000 en 1868; de 192,000 en 1871 et de 70,000 en 1872.)	500,000
Des provinces de Chan-toung, de Tché-kiang, de Ngan-hoeï, de Kiang-si et de Koueï-tchéou	120,000

SOIES DU VER À SOIE DE L'AILANTE *(Bombyx cynthia)*.

Des provinces de Chan-toung et de Ho-nan et de la Mandchourie. (La production est la plus abondante dans les arrondissements de Ning-haï (département de Teng-tchéou-fou) et de Moung-yin (département du Y-tchéou-fou.)	300,000

SOIES DES VERS À SOIE DU CHÊNE *(Bombyx Pernyi, B. mylitta)*.

Des provinces de Koueï-tchéou et de Se-tchouen. (Les plus grands marchés de ces soies sont à Nan-tchouen et à Pao-ning-fou, dans le Se-tchouen.)	1,500,000
Des provinces de Ho-nan[4], de Chan-toung[5], de Chen-si, de Chan-si et de la Mandchourie	600,000
TOTAL	10,560,000

En résumé, sur 10,560,000 kilogrammes de soies, 7,540,000 kilogrammes seraient le produit des éducations de vers à soie du mûrier; 620,000 kilogrammes seraient fournis par les vers à soie sauvages du mûrier et d'autres arbres; 300,000 kilogrammes proviendraient des vers à soie de l'ailante, et 2,100,000 kilogrammes des vers à soie du chêne.

[1] Ce qu'ont observé MM. MITCHIE et FRANCIS dans le Hou-péh et le baron DE RICHTHOFEN dans le Ho-nan donne lieu de penser que l'importance des récoltes y est plus grande. Le baron DE RICHTHOFEN a vu, dans le Chan-si, des plantations de mûriers à une altitude d'environ 1,600 mètres, et M. A. WILLIAMSON en signale jusqu'auprès de Jehol (Tching-té-fou), au delà de la Grande Muraille.

[2] Les meilleures soies jaunes du Se-tchouen viennent de Jin-tchéou, dans le Tse-tchéou et de Mien-tchéou.

[3] Presque toutes les soies du Se-tchouen sont à long guindre. M. EUGÈNE SIMON, qui a parcouru cette province, en a estimé la production à 1,056,000 kilogrammes de soie:

Soies du Kia-ting-fou	540,000 kilogrammes.
„ Pao-ning-fou	480,000 „
„ Souï-ting-fou	36,000 „

[4] Il se fait un grand commerce de soie du ver du chêne à Lou-chan, dans le département de Jou-tchéou-fou. Cette soie est tirée de cocons récoltés dans les forêts de chênes qui couvrent la chaîne des montagnes du Fou-yu-chan *(Reports of Baron von Richthofen on the Provinces of Hunan, Hupeh, Honan, and Shansi*, 1870).

[5] Dans les arrondissements de Ning-haï et de Si-hia (Teng-tchéou-fou) et dans la contrée comprise entre Moung-yin et Tsing-tchéou-fou.

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No. 95.
1880.

CUSTOM HOUSE,
YINGTZŬ, NEWCHWANG, *1st November* 1880.

SIR,

IN accordance with the instructions contained in your Circular No. 103, Second Series, of 1880:

Silk culture in China: reports upon, called for:

I have the honour to state that—

1°.—1°, the kind of Raw Silk produced, for purposes of export, in Shêngking (盛京) [the province of Manchuria in which Yingtzŭ (營子) is situated] is limited to that reeled from the cocoons of the worm fed on the leaves of the oak tree known as *Quercus Mongolica*, or *Quercus robur*. This worm is the *Bombyx Pernyi*, or *Bombyx Fantoni* of Italy.

The wild mulberry tree is exceedingly scarce in this neighbourhood, and has no place as a factor when treating of Silk grown for the market. In wealthy private families, however, the ladies and others who practise Silk culture as a pastime feed their worms upon its leaves. The thread so produced is never exposed for public sale.

Of the species of worm called *Bombyx cynthia*, which feeds on the *Ailanthus grandulosa* or Chinese varnish tree, nothing need here be said. The amount of silk derived from it is not more than can easily be consumed in the home of the cultivator.

2°, the adjoining kingdom of Corea produces mulberry Silk, principally white, which, as far as can be ascertained, is from annual and bivoltini cocoons. It is impossible, however, to obtain any information regarding the quantity which finds its way through this province for final exportation.

The Silk regions of Shêngking seem broadly divisible into distinct parts, separated one from the other, geographically, by the Sira Muren or Liao River (遼河), and, entomologically, by the type of silkworm they produce. The first and really important of these two divisions is that to the east of the great stream just mentioned. It comprises a not inconsiderable portion of the districts of Liaotung (遼東) and P'ingan (平安), and is about 80 miles, or 128 kilomètres, from east to west, by 150 miles, or 240 kilomètres, from north to south. It extends upwards from the lower valleys of the Yang (洋) [a river of P'ingan, which disembogues to the west of the Yalu (鴨綠)] to the hills in Liaotung, east of Moukden (瀋陽), the capital of this province

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and of all Manchuria. It is the home of the *Bombyx Pernyi;* and that part of the long tract of mountainous country, to the south-east of Yingtzŭ, which is nearest to the sea, is by the Natives asserted to cover ground most favourable to this species.

The towns of Fuchow (復州), Siuyen (岫岩), and Kaichow (蓋州), to the south, and Haich'êng (海城), to the north, are the chief local centres of the Silk trade. They are not open to Foreign commerce, but they nevertheless hold commercial intercourse with this port.

Haich'êng is distant 40 miles, or 64 kilomètres, from here, and 80 miles, or 128 kilomètres, from Moukden. It is the northern depôt. Kaichow, distant from this place 24 miles, or 39 kilomètres, is the southern mart. By far the greater quantity of the Silk produced in Liaotung and P'ingan is there shipped—in junks, of course—to Ninghai (甯海), in the province of Shantung (山東), to be subsequently manufactured into Pongee Piece Goods.

The second division into which I have divided our Silk regions embraces, irregularly, the major portion of Liaohsi (遼西), and from what I can gather concerning the low hills of this district, their scanty produce, from the *Bombyx cynthia,* would appear little worthy of Foreign attention. Indeed, I should hardly have mentioned this division at all but for the reference in your Circular to a place which lies within it. The city of Ichow (義州), ["département du Y-tchéou-fou" (?)] does not, most certainly, at the present day produce the abundant supply of *Soie de l'ailante* suggested by Mr. NATALIS RONDOT in his Memorandum No. 4.

The Silk dealers from China proper generally arrive each year at the unopen ports to the south and east of Yingtzŭ about the month of March, when the small rivers, being usually free from ice, are navigable. They then start for the Silk districts to purchase. The first crop is not, as a rule, exported, but is consumed locally. A small portion of the second crop is despatched to the ports at the end of October or early in November, so as to be in time for shipping away before communication is stopped for the winter by the ice in the rivers. The balance goes south in the ensuing spring.

The late Consul MEADOWS states that one valley alone produces 12,000 cubic feet of loosely piled cocoons, and that the yield of Silk throughout the entire region could speedily be quadrupled if Foreigners entered into the trade and gave sufficient inducement to the cultivators to cover the hillsides with oak shrubs. They would then have more extensive feeding grounds, and be able to increase the number of caterpillars. Not one-tenth part of the hills, at the present day, have these shrubs planted on them. It is obvious, therefore, that the production could be considerably augmented if a demand sprang up for this kind of Silk.

Mr. MEADOWS further states that, considering the scarcity of textiles, Foreigners should be able to make lucrative shipments of Silk from this port, as the Natives have, apparently with profit, during ages past, carried it southwards through the junk ports at the head of the Yellow Sea and Liaotung Gulf.

Few, if any, cocoons come here for export in junks, and there is only one instance on record in this office of a shipment by a Foreign vessel. This case happened in April 1880. It was per steamer to Chefoo, and to the extent of but 66 catties, or 39.911 kilogrammes.

That Yingtzŭ should be able to compete favourably with these junk ports as an export depôt, there can be no doubt, for the light cocoons could, with comparative cheapness, be transported here from the Silk regions.

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This is made clear by the fact that even now Yingtzŭ competes, on more than equal terms, with the junk ports as a depôt for heavy cotton goods; although, to so compete, the difficult cart transit across the mountains has to be faced. The quicker passages of Foreign vessels, the cheaper freights, and the advantage of insuring the merchandise, turn the scale.

"The textiles manufactured in the province of Shêngking from Silk of wild silkworms are in no way inferior to those produced in the province of Shantung." * The truth of this is borne out by the report of the Shanghai Chamber of Commerce in 1864, to which was sent, through the instrumentality of Mr. Consul MEADOWS, specimens of cocoons, Silk, etc., from the Silk regions of this province; which specimens were subsequently forwarded to Lyons. The Silk was judged to be quite equal to the Shantung Pongee, and was described as being a very serviceable material. As manufactured here, the fabrics are darker in shade and colour than the Shantung, have less lustre, and are harder to the touch. Notwithstanding the favourable opinion expressed in the above report, no speculation to any large extent has been entered into by Foreign merchants. This is probably due to the rude manufacture, the coarse and unequal thread, devoid of gloss, and the want of either tram or organzine, the fabrics being simply woven from the raw material as it comes reeled off the cocoons.

In appearance the inferior kinds of cloth are like nankeen or coarse linen. The Silk as reeled by the Natives and tested by boiling remains nearly the same colour. This discloses the serious fact that it will not take any permanent dye, doubtless due to excess of soda used at the time of reeling to dissolve the gum on the cocoon; and to this also may be ascribed the impossibility of dyeing it any colours but dark mahogany, black, or grey. This defect necessarily decreases its value as a saleable commodity for home markets; hence the small demand and few shipments made by Foreigners. If, however, the Silk is reeled according to Western ideas, its hue after boiling becomes nearly white; it will take any dye, and, if well wound, could doubtless be advantageously employed for tram in European manufacture.

The quantity of gum ascertained to be found in a piece of cloth woven according to the primitive mode in vogue amongst Natives in this province is 20 per cent. or thereabouts.

The yield of 10 lbs., or 4.534 kilogrammes, of cocoons produced in this region and reeled by Native appliances is about 1 lb., or 0.454 kilogrammes, of Silk, while it usually takes only 4 lbs., or 1.814 kilogrammes, of European dry cocoons, of good quality, to give a like quantity. This, at first sight, exhibits a marked contrast. The difference is attributable to the larger bulk of the Native worm, its damp state at the time of reeling, the rough machines used for this process, and, in a great measure, to the waste which must take place before a clean thread can be drawn. This waste is unlike good Silk, in being non-elastic and almost destitute of gloss.

There are two ways of winding the Silk in practice here. The first is by reeling, and the second by spinning. Reeling is done by two methods, called "water" and "dry." The latter plan is the more common.

In reeling by the "water" method, several hundreds of cocoons are put into an iron pot containing water sufficient to cover them, with about 8 ounces, or 0.227 kilogrammes, of crude soda. The latter article, which is plentiful in this province and a strong alkali, quickly dissolves the gluten, when the threads of 8 or 10 cocoons are caught up together and reeled off.

* 盛京通志 *(Shêngking T'ungchih)*, vol. xxvii. Officially published.

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By the "dry" system, the cocoons are first of all boiled in a potent solution of soda, or nitrate of soda and lye-ash, and then reeled from a table at *uso doppio.**

The usual mode of killing the chrysalids is by steaming them. The cocoons are placed in small baskets, about 2,500 in each, and then held over pans of boiling water. Care is taken to kill the chrysalis without injuring the Silk. Reeling can at once take place after this is accomplished; but if the cocoons are allowed to remain until they become dry, it is necessary to dissolve the agglutinated mass of Silk in warm water before it is possible to unwind it.

The discarded chrysalids are hawked about the streets, and sold to the lower classes as an article of diet. The price is about 10 centimes per 454 grammes.

As Silk of the spring crop cocoon is of a finer quality than the autumn, reeling is chiefly confined to the former season. In the latter, it is generally spun.

The spinning-wheel is similar to that seen in European villages, and is worked by treadles and hand. The chrysalis is first extracted, and after the cocoons have been boiled in nitrate of soda and lye-ash, 8 to 10 of them are threaded, one above the other, on the bamboo distaff. The threads are manipulated much in the same way as was flax before the "jenny" was invented.

I am informed by some Chinese that for the good quality Silks 16 filaments are reeled to the thread. Inferior qualities have as many as 20, 22, and 24, very often more. The finest kinds vary from 8 to 12.

The fineness of Silk in a fabric cannot, as in Europe, be arrived at by the number of warp lengths. The Natives use combs with a reduction of 13 to the centimètre. The difference in the weight of the stuffs woven depends on the *title*† of the Silk used.

Wild Silk grège is only charged with the nitrate of soda in which the cocoons have been boiled or steeped previous to reeling, and with the natural tannin of the cocoons and chrysalids, not with an additional quantity of dye or sugar, to increase its apparent substance. The heavier the title, the darker the Silk will appear. Nitrate of soda being a strong deliquescent, it causes the Silk to absorb and retain a great amount of moisture in damp or wet weather. This gives inferior or heavy title Silk the appearance of being weighted with a foreign body.

The manufacture of Silk in this region, like nearly all other arts in Asia, is chiefly undertaken individually; each one spins, weaves, and dyes his own material. There is no attempt at division of labour or employment of capital, as seen in Western nations in the shape of manufactories, etc.

* *Uso doppio.* A technical expression to denote the special system adopted for reeling double or any other class of cocoons which cannot be reeled in the ordinary way.

† *Title* [French *titre*]. To ascertain the fineness of filaments of cocoons, or of thread made with several such filaments, a certain length is measured of either of them, and then weighed. The more or less weight determines their respective fineness, or what is technically called title. The usual course is to reel off on a specially constructed reel 450 mètres in length of the Silk to be tried. [The same if cocoon filaments are the subject of test.] Supposing that these 450 mètres were found to weigh 5 décigrammes, then the title of Silk would be classed at 10 deniers, the denier being equal to half a décigramme.

The denier has been retained for classing Silk from old usage, being very convenient as an unit.

It requires, on an average, 4,500 to 5,000 of the spring, or 4,200 of the autumn crop cocoons, to weave, by a Native loom, one piece of Silk 16.22 mètres in length and 0.44 mètres in breadth; and about 4,100 of the spring, or 3,500 of the autumn cocoons, for a piece 14.04 mètres long and 0.44 mètres wide.

The Silk yielded by spring cocoons is therefore much less than that of the autumn. But, as though to compensate for this deficiency, its quality is much superior, being whiter and finer.

A weaver is occupied, say, two days making a piece of Silk, and is paid at the rate of 2 to 4 mace of silver, or $1\frac{1}{4}$ francs to $2\frac{1}{2}$ francs, per piece, in proportion to the quality of his workmanship. Each piece is sold by weight, which weight ranges from 25 taels to 40 taels [1 tael=37.58 grammes]; the price varying accordingly from *Tls.* 1.20 to *Tls.* 2.80, or 7 francs and 18 francs respectively, for the common kind, to *Tls.* 4, or 26 francs, for best, per piece.

There is a black sort of Silk produced in the neighbourhood of Kaichow. From inquiries which I have made of Chinese concerning it, I am told that it is spun by the worm *Bombyx Pernyi*, which contracts a habit of devouring, not only the leaf of the oak shrub, but also its petiole, ribs, and veins. The result of this is that the body of the worm and the Silk it produces become black.

Of the kind of black Wild Silk which Dr. WILLIAMSON, in his *Journeys through North China*, states he met with in Shantung, and the producing worms of which are fed on the black pepper tree, no trace is to be found in this province.

Below is a test table showing the length, weight, and title of five cocoon samples from the Silk districts adjacent to Yingtzŭ.

No.	LENGTH OF SILK ON EACH COCOON IN MÈTRES.	WEIGHT OF EACH COCOON IN GRAMMES.	TITLE OF EACH COCOON IN DENIERS.
1	422	0.460	8,500
2	565	0.500	7,080
3	375	0.300	7,060
4	490	0.425	8,000
5	652	0.475	6,560
TOTAL	2,504	2.160	37,200
AVERAGE PER COCOON	500.80	0.432	7,440

Reeled according to the Chinese mode, it takes 100 fair-class cocoons to yield 2,645 grammes of net Silk.

To find the probable Silk outturn of a quantity of cocoons, the Natives reckon by number, and not by weight, as in Europe. So likewise with the eggs and chrysalids; three-fourths of the former, and one half of the latter, if ultimately yielding cocoons, would be considered a good crop. There are many bad eggs in a lot, and the deaths among young worms are considerable.

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The European custom of taking the weight of a number of cocoons as a basis of calculation to find the quantity of Silk a crop is likely to afford, cannot be applied here, because of the heavier chrysalis, greater waste in reeling, etc.

The Natives pick out the most promising-looking cocoons, and either sell or keep them for breeding purposes. They are sold by number, and not by weight, the price ranging from five to seven mace of silver per 1,000, according to the prosperity of the year.

The distinguishing features between the male and female cocoons are—in the former, both ends are pointed, and the envelopes stronger but smaller than those of the female; the latter are thicker, almost round, and comparatively soft. The largest cocoons are generally over 5 centimètres in length and 3 centimètres in diameter after they are divested of their floss Silk.

Wild silkworms in this province are bivoltini: two crops of Silk are derived from them in the year, called by Chinese "ch'un" (春), or spring, and "ch'iu" (秋), or autumn crop. The first is spun by the larvæ hatched about April–May from the eggs of moths the pupæ of which have remained undeveloped in their cocoons throughout the winter months from the previous autumn, and from which they make their escape, in the butterfly shape, as soon as the sun has gained sufficient power to affect the chrysalids. The second is obtained from the worms of eggs hatched in July. The moths which lay them are from the chrysalids of the spring crop, which, without interference, burst forth from their temporary prisons about 15 days after spinning has ceased—say, early in July,—assume the imago state, and lay the eggs from which the Silkworm is hatched 10 days later.

To preserve the cocoons through the winter months, they are placed in baskets and hung up, facing the south, in the dwelling-houses. They are thus sheltered from the bitter north winds which prevail during the winter, and derive the benefit of the sun in that season, when the sky is nearly cloudless for about three weeks out of every month. Besides this, in each room is a brick oven, built for the purpose of heating it. At night this "k'ang" (炕) is used as a bed to sleep upon, and during the day serves as a seat and table combined. Inside there is a flue, and at one end an opening in which a fire of millet stalks is generally kept going.

Notwithstanding, however, the heat which proceeds from this, the temperature of a Native house in the mountains of the Silk regions must be, during the greater part of the winter, many degrees below freezing point.

The Chinese say that the chrysalis could doubtless stand the hard winter even if left exposed, as formed, on the bushes, the worm being indigenous to these parts. But, putting aside the destruction which wild animals, birds, and reptiles would be likely to cause, it is running a great risk, for nights exceptionally cold would most probably allow none but the strongest to survive the winter, the weak ones succumbing to the cold.

The éclosion of the aurelia from the cocoon usually takes place between 4 P.M. and night. It is effected, without the breaking of even a single thread, by the moth ejecting an acid secretion, which dissolves the gluten, at the end of the cocoon corresponding to its head. The moth then forces its head out and finally emerges.

The males and females are separately placed at first in bell or circular shaped baskets of 100 in each, to allow their wings to dry before coupling. After this, their contents are thrown

together for a period of 12 to 20 hours, when the males are discarded and the females put in covered baskets by themselves. This process is dispensed with in the autumn, because of the warmer weather, and, instead, the moths are placed on the leaves of cut branches hanging up in the houses; a thread is attached to their wings and to these branches, on the leaves of which they lay their eggs.

It is the common practice to put together those of each sex who emerge on the same day, as the eggs are then considered to be better.

About four or five days after the moths have coupled and impregnation has taken place, the females lay their eggs—in the spring, on thin paper or cloth placed on mats, etc., for the purpose; in the autumn, on leaves, as before stated. This operation lasts about four days, the average number of eggs laid by each female being estimated at from 200 to 300, but instances are known of a good moth excluding as many as 550. The females then die. The best eggs are those which are laid on the first two days.

After about six days' exposure to the air, from each egg comes forth a small black worm, not unlike an ant in size and appearance. This is the worm in its first stage. It is at once transferred to the leaves of the young oak-shrub shoots, which have been previously forced by lopping and placing in cold water. After feeding on these leaves for a few days, and when nearly an inch long, the worm is removed to the most tender-leaved oak shrubs on the sides of the hills. Rain at this stage does not affect it injuriously. Its greatest enemies are centipedes, birds, etc. The Natives, to ward these off, frequently discharge guns and fire-crackers, and make a noise by beating on a hollow bamboo.

Another plan, often adopted when the worms are just hatched, is to put 70 or 80 of them on the leaf-bearing shoots of the oak shrub which spring from the roots of the tree after it has been cut down close to the ground. The number of bushes on a given space now serves as the basis of a calculation for the extent of the breeding.

After the lapse of five days' from the time the larva is hatched, its first "mute" or "sleep" occurs. Immediately afterwards it casts its skin. The worm has hitherto been black, but it now assumes, and maintains almost to the last, a bright green colour, and rapidly increases in size. Generally, the spring worm undergoes altogether four mutes, and the autumn one five; but if it happens that the former sheds its skin five times, the latter will then do so but four. The year's worms have thus a total of nine sleeps or mutes.

Each sleep occupies from one to two days, according to the state of the weather.

The second mute occurs about the 12th day, the third about the 23rd, the fourth about the 32nd, and the fifth about the 46th day, after hatching. The average time necessary for a worm to arrive at maturity, counting from the date of hatching till it prepares to spin the cocoon, is from 46 to 60 days. There is, however, often a difference of 10 days, sooner or later, in the existence of the worms.

In autumn, the period for arriving at maturity is longer by 20 to 30 days.

On the approach of each stage, when the worm is about to change its skin, it ceases eating, erects the fore part of its body, and remains asleep in this position until the new skin is sufficiently perfect to enable the caterpillar to wriggle out of its old one. This is a critical time,

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and often proves fatal, for, should the worm be unable to clear the last segment of its body of the old skin, it will probably die.

On completion of each sleep its appetite increases greatly. After recovery from the last sleep—fourth or fifth, as it may happen—it devours the leaves most greedily. In the course of the next 10 days, the worm, which is full grown and about 3 inches to 4 inches long, now commences to spin its cocoon. This is done by taking two or three leaves facing each other of the tree it is feeding on, and joining them by drawing the threads of silk [which issue from its mouth] from, and fixing them to, various points about the leaves, and forming them in the shape of a cupule, into which it drops and speedily becomes enclosed in a network of its own silk threads. This outer silk is called floss, and is usually made into wadding. The inner and more dense kind forms the hard skin-like substance of the cocoon, which has to be boiled in an alkaline solution before reeling can be effected. Spinning takes about five days to complete. The worm then becomes torpid, passes from the larva and appears in the pupa or second stage, *i.e.*, in the third form of insect transformation. After remaining thus for—if the production of the spring crop worm—about three weeks,—and, if the production of the autumn crop worm, throughout the winter,—it then emerges from the aurelia, and takes the imago or moth state, the last and perfected period of its existence. The processes already described are subsequently repeated.

The disease amongst the worms in Japan, occasioned by the "uji," is very rarely met with in these parts. The insect so named perforates with its ovipositor the bodies of the caterpillars, and deposits in them its eggs, which latter produce parasitic larvæ. These reside like intestinal worms within the bodies of the grubs, feeding only upon the fatty matter, and carefully avoiding the vital organs. The parasites, as soon as they attain full size, assume the the pupa state, pierce the skins of their victims, and come forth. This "uji" probably belongs to the genus of insects known to European naturalists as ichneumon.

Other diseases common to the silkworm of Europe are all but unknown in Manchuria.

Mr. Consul MEADOWS gives the following description of the Manchurian silkworm:—

"Just before spinning its cocoon it is a bright green-bodied grub or caterpillar, measuring 9 to 10 centimètres in length, with a light brown head. On its pale brown face there are six or eight small black specks. [Some Chinese say these are breathing holes; others, eyes.]

"Its body has twelve joints: on eight of these, it has on each a pair of claws, five pairs of what I shall call back claws on the hinder part of the body, and three pairs of front claws on the forward part. The hindermost or tail joint has a pair of the back claws; then there are two joints without claws; then come four joints, each with a pair of back claws [one on each side]; then come two joints without claws; and then the three foremost joints, each with a pair of the front claws. The five pairs of back claws are less developed as claws than the front ones, being, to outward appearance, of the same soft, green matter that the body is composed of, and merely tipped with a small piece of hard substance of the same light brown colour as the head. The three pairs of front claws are, on the other hand, curved, and are entirely composed of the hard light brown substance. The five pairs of back claws serve as feet, by means of which the animal holds on to the twig or stem part of the leaf, while the front claws serve as hands, by means of which it twists round the edge of the leaf to its mouth. When the grub is in one of its torpid periods, it holds on to the twig solely by means of the five pairs of back claws,

the foremost five joints [three with claws and two without] being altogether detached from the twig in the air. A little above the claws on each side there is on each joint or segment a bright blue speck, out of which two or three hairs grow. A little above those blue specks there is on each side, down the last or tailmost nine joints, a brownish streak, which two streaks widen and join together as a brown band on the tail joint. On the eighth and ninth of the joints, counting from the tail end, there are on this brown streak two silvery or white metallic-coloured spots on each side. The brown band does not extend to the foremost three joints; on the other hand, each of these joints has two blue specks on each side, one above or higher up than the other. The animal is thickest about the second and third joints, counting from the head, and tapers off somewhat toward the tail."*

There are three kinds of trees the wild worms feed on. They are all of the oak species and I am unable to class them with any accuracy by their native names.

The first kind, according to Mr. FAUVEL, is the *Quercus custaneæfolia;* in Chinese, Tsomu (柞木), Ts'ingkang-liu (青槓柳), and Polo (菠蘿), or chestnut-leaved oak.†

The second kind, that used here, called Siaots'ing-kang (小青槓) and Siaoyeh-tso (小葉柞), meaning small leafed-oak, is the *Quercus Mongolica* or *robur.*

The third kind, known to the Chinese as Tats'ingkang-liu (大青槓柳) and Tayeh-tso (大葉柞), *i.e.* large leafed-oak, has leaves very much darker than those of the two preceding varieties, measuring about 30 centimètres in length. It is the *Quercus dentata.*

Although the worms in the Silk districts of Manchuria are fed exclusively on the leaves of the *Quercus Mongolica,* when the latter are abundant, yet when, as often happens, such food is scarce, the Natives indiscriminately transfer the grubs to the leaves of the other varieties of oak just described.

The soil most suited to these trees is a rich marl; wanting this, earth composed of half clay and half sand is preferred. A soil consisting of nearly all sand is not good, as it tends to toughen the leaf and prevents its attaining any size.

After the tree is six years old, the branches are biennially severed close to the roots, and are never allowed to exceed 5 feet or 6 feet in height. First, on account of the consequent convenience for placing the worms on them and, secondly, because the leaves are then deemed to be more tender than if the trees were permitted to grow larger. Another advantage derived from stunting their growth is the certainty of the cultivators having a more plentiful supply of young tender shoots and leaves for the ensuing seasons.

In the previously noticed report of the Shanghai Chamber of Commerce, I see it stated that the silkworm of Manchuria would be most valuable in restoring to health and vigour the worn out *bombyx* of Europe. As far as I am aware this experiment has not yet been made.

2°.—The Raw Silk of Manchuria is classed as follows:—Huangssŭ (黃絲) and Paissŭ (白絲) for yellow and white mulberry fed; and Yehts'an-ssŭ (野蠶絲) for oak fed. Each of the above sorts is again divided under the headings K'uang (絖), or reeled, and Nien (拈), or twisted.

* *Commercial Reports from Her Majesty's Consuls in China and Japan,* 1865.

† "The Wild Silkworms of the Province of Shantung."—*China Review,* vol. vi, p. 89.

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3°.—The average production of the Raw Silk given—

1°, by the worms fed with mulberry leaves, is about 40 piculs, or 2,418 kilogrammes, per annum;

2°, by the worms fed with ailanthus leaves, so little as to be hardly worthy of mention;

3°, by the worms [one species only] fed with oak-tree leaves, or on oak-trees, between 4,000 and 5,000 piculs, or 241,872 and 302,340 kilogrammes, according as the year is a good or bad one; and

4°, by the wild worms fed on mulberry trees, about 100 piculs, or 6,046 kilogrammes, per annum.

4°.—[*This query does not interest the Newchwang office.*]

5°.—[*This query does not interest the Newchwang office.*]

6°.—There are no regular establishments to make Thrown Silks existing in Manchuria. What little is made is by private families for their own use.

7°.—From what I can glean concerning Silk-weaving looms in this province, I believe there are only a very few at work weaving Silk Pongees, and these are in the neighbourhood of Kaichow.

8°.—The probable production in these regions—

1°, of Thrown Silk, is trifling; and

2°, of Silk Piece Goods, about 1,500 piculs, or 90,702 kilogrammes, or 75,000 pieces, 19,000 pieces of which are usually consumed locally.

9°.—[*This query does not interest the Newchwang office.*]

10°.—There are at the present day no places in this province where Silk is manufactured for the Imperial Court or for rich private families.

11°.—The only kind of Silk goods "of a manufacture special to China or little known in Europe" produced here is a description of Silk Gauze. This is made in two colours.

In conclusion, I must express my regret at having been obliged to delay the transmission of this Report. The greatest difficulty has, however, been experienced in procuring any of the samples which must necessarily accompany it. One specimen in particular, and that an important one—the black Silk mentioned on page 13—is, in fact, still wanting.

But for the aid of an Italian friend and the exertions of my secretary, Mr. Assistant HUNT, these pages would carry with them even less information than I would fain hope they may be found to contain. My acknowledgments are therefore due to both the gentlemen in question.

I have, etc.,

J. ALEX. MAN,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,

Inspector General of Customs,

PEKING.

ENCLOSURE.

LIST OF SAMPLES SENT.

No. of Sample.	NAME IN CHINESE.	NAME IN ENGLISH.	PLACE OF PRODUCTION.	USE.	PRICE.
1	Lien-kuo-yeh-ts'an-ch'un-chien 練過野蠶春繭	Wild oak-fed spring crop, prepared for spinning or twisting.	Fuchow, Siuyen, Kai-chow, and Haich'êng. 復州, 岫岩, 蓋州, 海城	Made into Pongee Piece Goods.	2 mace of silver per 1,000 [say, 1¼ francs].
2	Yeh-tsan-ch'iu-chien... 野蠶秋繭	Wild oak-fed autumn crop cocoons.	" " "	Reeled or spun, and made into Pongee Piece Goods.	5 to 7 mace silver per 1,000.
3	Sang-ts'an-chien [white and yellow] 桑蠶繭	Mulberry-fed cocoons	Fuchow and Kaichow	Made into thread	1 mace of silver per 454 grammes [including chrysalis].
4	Yeh-ts'an-ssŭ [ch'un] 野蠶絲春	Wild oak-fed Silk [spring crop, reeled].	Fuchow, Siuyen, Kai-chow, and Haich'êng.	Made into Pongee Piece Goods.	4 candareens to 1 mace of silver per 38 grammes.
5	Yeh-ts'an-ssŭ [chiu]... 野蠶絲秋	Wild oak-fed Silk [autumn crop].	" " "	" " "	" " "
6	Sang-ts'an-pai-ssŭ ..... 桑蠶白絲	Mulberry-fed white Silk [reeled 15 to the thread].	Fuchow and Kaichow	Made into thread and Silk Gauze [*see* sample No. 16].	*Tls.* 1.58 per 454 grammes.
7	Sang-ts'an-huang-ssŭ 桑蠶黃絲	Mulberry-fed yellow Silk...	" " "	Made into thread and Silk Gauze [*see* sample No. 17].	" " "
8	Ch'un-chien-nien-sien 春繭拈線	Wild oak-fed spring crop—twisted thread.	Fuchow, Siuyen, Kai-chow, and Haich'êng.	Made into Pongee Piece Goods.	9 mace to 1 tael of silver per 454 grammes.
9	Pên-shai-k'uang-ssŭ-ch'ou 本色絖絲綢	Reeled Pongee Piece Goods—natural colour.	" " "	Clothing	*Tls.* 3.40 per piece, 18.22 mètres long and 0.52 mètres wide.
10	Fang-sien-chien-ch'ou 紡線繭綢	Wild oak-fed autumn crop spun Silk Silk Piece Goods.	" " "	"	*Tls.* 2 per piece, 18 mètres long and 0.49 mètres wide.
11	San-shai-ch'un-chou... 染色春綢	Spring crop Pongee Piece Goods—dyed, twisted.	" " "	"	*Tls.* 4.40 per piece, 16.22 mètres long and 0.48 mètres wide.
12	Mien-ch'ou..... 綿綢	Mulberry-fed Silk Piece Goods.	Fuchow and Kaichow	Under-clothing principally.	*Tls.* 3.80 per piece, say 20 mètres long and 0.42 mètres wide.
13	Luan-ssŭ-t'ou..... 亂絲頭	Refuse Silk.....	Fuchow, Siuyen, Kai-chow, and Haich'êng.	Wadding, bags, etc. ...	6 candareens of silver per 605 grammes.
14	Shui-ts'ing-luan-chien 水清亂繭	Refuse cocoons with Silk...	" " "	Coarse bags, etc.	3 to 6 candareens of silver per 605 grammes.
15	K'uang-ssŭ-t'ou ..... 絖絲頭	Refuse Reeled Silk	" " "	Wadding and coarse Piece Goods.	1 mace 6 candareens per 605 grammes.
16	Pai-lo-ti-sha ..... 白羅底紗	White Gauze for sieves	Kaichow	Bottoms for sieves	*Tls.* 3 per piece, 8 mètres long and 0.45 mètres wide.
17	Huang-lo-ti-sha ..... 黃羅底紗	Yellow Gauze for sieves ...	"	" "	" " "

TIENTSIN.

No. 125.

CUSTOM HOUSE,
TIENTSIN, 18*th December* 1880.

SIR,

IN accordance with the instructions contained in your Circular 103 of 1880, I beg to lay before you the following report on Silk culture in the provinces of Chihli, Shansi, and Honan.

The Silk culture in the above provinces is not of great importance, and as an article of trade, Silk does not appear among the exports from this port, whereas Silk Piece Goods of all descriptions are largely imported from southern ports.

It is said that 30 years ago the production of Silk in these provinces was more extensive than at present, and probably the decrease is due to improved means of transport and communication by steamers of late years, as well as to the superior quality and cheapness of the southern goods.

In most districts where Silk is cultivated, the quantity produced is insufficient even for local wants, and hence the difficulty of obtaining samples of the goods, and reliable information, as asked for in your circular. The districts, besides, are scattered over so large a territory that it would require long application and study to arrive at a satisfactory result.

In Honan the cultivation of Silk is of greater importance than in Chihli or Shansi, and some of the goods produced there find their way to the markets of the adjoining provinces.

I will now proceed to answer *seriatim* the queries contained in your circular.

1°.—What kind of Raw Silk is produced—

1°, in the province where your office is situated ?

In Chihli, at Yungping-fu (永平府), and to the north-east as far as Shanhai-kuan (山海關), Silk from the worm reared on mulberry leaves, as well as wild Silk, is produced. The former is white and yellow, the latter of a light brown colour, but it has a superior gloss to the kind from the north-west of Shantung. It is sold in long reels at an average price of *Tls.* 50 per picul of 128 catties (20 taels to the catty). More wild Silk than cultivated is produced here (about seven-tenths to three-tenths cultivated). The quality of cultivated Silk in this district is much like the Shantung "Chouping" Silk; its value ranges up to *Tls.* 160 per picul, and it is woven in the district for local use.

From Peking to the north-west, in the Chaitang (寨塘) district, the same kinds of Silks are produced, but the price is about 10 per cent. higher. It is brought to the capital, where it is manufactured into Pongees or into Silk and cotton mixtures. At Ichow (易州), Ch'üchow (曲州), and Ch'angyüan-hsien (長垣縣), in Taming-fu (大名府), the worms are fed on mulberry

leaves, and at these places Pongees and Silk and cotton mixtures are manufactured. At Lao-chang-tzŭ (老杖子), a place in P'ingch'üan-chow (平泉州), a thick, coarse, hard, and very durable material, Chüssŭ-chien (曲絲繭), is made from wild Silk. The worms feed on the ailanthus (臭椿), oak leaves (椽葉), and the leaves of other plants. At Chiench'ang-hsien (建昌縣), in the same *fu*, a material somewhat thinner than the Chüssŭ (曲絲) is made of wild Silk. It has the appearance of dimities, and is called Chienchang-chien (建昌繭). It is chiefly used by Mongolians. The wild cocoons are gathered among the hills by women and children, and sold to the weaving establishments for 200 small *cash* per catty (18 taels equal 1 catty, 112½ catties equal 1 picul). It is said that the worm is much larger than the kind feeding on mulberry leaves, and the cocoons about three times the size; but reared on mulberry leaves they are not so profitable.

The yearly production of cultivated Silk in Chihli is estimated at 300 piculs, that of wild Silk at 700 piculs. Of cultivated Silk, about four-tenths is yellow and six-tenths white. The reels brought to the markets are chiefly singles, and they are afterwards re-reeled or thrown according to requirements. The cultivated Silk comes into the markets in the fourth and fifth moon, the wild in the seventh and eighth. Under favourable circumstances, the wild insects may undergo the metamorphosis three times, the cultivated twice, yearly.

2°, in the provinces or districts where there is no port open to Foreign trade, but with which the province mentioned above holds commercial intercourse?

In Honan, Lushan-hsien (魯山縣) produces Raw Silks and Piece Goods of good quality, known as Lushan-ch'ow (魯山綢), in length about 52 feet, by 1 foot 3 inches. It is sold according to weight, about 2 mace per tael, and the weight of a piece is about 2½ catties. The colour is yellowish or grey. The length of Honan Pongee is from 25 feet to 27 feet, by 1 foot 2 inches to 1 foot 8 inches in breadth. Satin and Crape are sold in pieces of about the same length and breadth. Handkerchiefs are 2 feet 5 inches by 1 foot 2 inches; some are 4 feet long. From Nanyang-fu (南陽府) the tribute Silks are sent to the capital. It produces a superior kind of corded Silk Piece Goods known as Nanyang-tuan (南陽緞). There is a kind called Erhtsê-lung (二則龍), from its pattern—large circles with figures representing two dragons. Piece Goods made from wild Silk are used locally only.

The probable yearly production of cultivated Silk in Honan is 7,000 piculs—about 6,000 piculs white, and 1,000 piculs yellow. Of wild Silk, about 3,000 piculs are produced.

The following is the value of Honan white and yellow Silk:—

1st	quality,	white	. . . . .	per	picul	of	112½	catties,	*Tls.* 218
„	„	yellow	. . . . .	„	„	„	„	„	197
2nd	„	white	. . . . .	„	„	„	„	„	192
„	„	yellow	. . . . .	„	„	„	„	„	160
3rd	„	white	. . . . .	„	„	„	„	„	153
„	„	yellow	. . . . .	„	„	„	„	„	137
4th	„	white	. . . . .	„	„	„	„	„	120
„	„	yellow	. . . . .	„	„	„	„	„	104
Wild Silk			. . . . .	„	„	„	„	„	63

In Shansi only little Silk is produced.

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Luan-fu (潞安府) produces cultivated Silk, of which Pongee is made, called Ch'uanch'ow (川綢) or Luch'ow (魯綢). The piece is about 50 feet long by 1 foot 5 inches to 1 foot 7 inches broad, and weighs from 25 taels to 27 taels. Inferior Pongees of various lengths and weights are also made at this place, as well as a kind of lutestring, Shengssu-chüan (生絲絹), called so on account of its want of gloss. Inferior plain and figured Satins and Satin handkerchiefs are also made in this district. At Wuning-fu (武甯府) and at Tsêchow (澤州), inferior Pongee is also made.

Shansi probably produces only 700 piculs Raw Silk annually, of which 500 piculs are wild.

2°.—What are the names given to the various kinds of Raw Silk (Tsatlee, Taysaam, etc.)?

These kinds of Raw Silk are not cultivated in the districts over which my inquiries have extended.

3°.—What is the average production of the Raw Silk given—

1°, by the worms fed with mulberry leaves?

2°, by the worms fed with ailanthus leaves?

3°, by the worms (two species) fed with oak-tree leaves, or on oak-trees?

4°, by the wild worms fed on mulberry trees?

I have not been able to ascertain the average production.

4°.—It is said Silk is obtained—

1°, from the cocoon of a large worm (Attams Atlas?) living in the Lofou Hills (Kwangtung);

2°, from the reticular cocoon of a worm fed on the camphor tree.

If this statement is true, what are the names of these Silks? what quantity produced? what use of them?

I have no knowledge of such a Silk being obtained.

5°.—How many, where, have establishments where Foreign machinery is used to reel Silk been started in China?

None have been started in Chihli, Honan, or Shansi.

6°.—How many, where, do Native establishments to make Thrown Silk exist in China?

No reliable information could be obtained on this subject.

7°.—How many, where, do Silk-weaving looms exist in China?

On this subject no satisfactory information has been obtained.

8°.—What is the probable production in each province—

1°, of Thrown Silk?

2°, of Silk Piece Goods?

I could not ascertain with any degree of accuracy.

9°.—Has the Taiping insurrection done any harm, etc.?

The three provinces of Chihli, Shansi, and Honan were little affected by the insurrection.

10°.—What are the places where Silk manufactures, etc.?

There are none to my knowledge in the three provinces mentioned above.

11°.—What are the Silk Goods, etc.?

I have no information on this subject.

The following is a list of samples sent with this Report:—

1. White Silk, produced in Chihli.
2. Yellow Silk „ „ „
3. White Silk.
4. Yellow Silk, produced in Honan.
5. White Silk „ „ „
6. White Silk „ „ „

PIECE GOODS:—

1. T'iench'ing, produced in Honan.
2. Pienchow „ „ „
3. Chowsha „ „ „
4. Pienchow, produced in Honan.
5. Mienchow „ „ „
6. do. „ „ „
7. Lushan-chow „ „ „
8. Pienchow „ „ „
9. Pienling „ „ „
10. Nanyang-chow „ „ „
11. Chienchow „ „ „
12. Lushan-chow „ „ „

I have, etc.,

DETRING,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

CHEFOO.

No. 89.

CUSTOM HOUSE,
CHEFOO, *4th October* 1880.

SIR,

IN reply to the queries contained in your Circular No. 103, Second Series:
Silk culture in China: reports upon, called for:

I have the honour to submit the following particulars regarding the production and manufacture of Silks in the province of Shantung.

1°.—1°, the kinds of Raw Silk produced are—

Silk, yellow and white, from mulberry cocoons.

Silk, from oak cocoons, water and dry Reeled Silk, from ailanthus tree cocoons.

Silk, from wild worms fed on mulberry leaves.

Silk, from worms fed on a shrub *(Xanthoxylon alantum)* called by the Natives Huatsiao (花 椒), peppery flower. This kind is produced in very small quantities, and is never offered for sale in the market. It is made up into cloth for private individuals, and when manufactured has still a slight aroma, which, in the opinion of the Natives, is the cause that it is never attacked by moths.

2°, no Silk comes to Chefoo from the adjoining provinces.

2°.—The names given to the various kinds of Raw Silk are Huangssŭ (黃 絲), or yellow Silk; Paissŭ (白 絲), or white Silk—generally called Hsiaochien-ssŭ (小 繭 絲), *i.e.* Silk from small cocoons; Yêhts'an-ssŭ (野 蠶 絲), or Wild Raw Silk; Shuissŭ (水 絲), or water-reeled; 'Hanssŭ (旱 絲), or dry-reeled—generally called Tachien-ssŭ (大 繭 絲), *i.e.* Silk from large cocoons, in contradistinction to the yellow and white Silk, or Hsiaochien-ssŭ; Shuchien-ssŭ (樗 繭 絲), Silk from worms fed on the ailanthus tree; Tsiaochien-ssŭ (椒 繭 絲), Silk from worms fed on the shrub Huatsiao (花 椒) *(Xanthoxylon alantum);* Sangchien-ssŭ (桑 繭 絲), Silk from wild worms fed on mulberry trees.

3°.—The annual production of the Raw Silk given—

1°, by the worms fed with mulberry leaves, amounts to about 80 piculs of white Raw Silk and 1,024 piculs of yellow Raw Silk. The export of white and yellow Raw Silk was in 1875 only 34 piculs; in 1876 it amounted to 1,629 piculs, in 1877 it fell to 124 piculs, and in 1878 and 1879 it rose to 1,115 piculs and 1,034 piculs respectively. During the first six months of 1880, 89 piculs only were exported.

NOTE.—1 picul = 100 catties = $133\frac{1}{3}$ pounds English.
1 catty = 16 taels.
1 tael = $1\frac{1}{3}$ ounces English.

2°, by the worms fed with ailanthus leaves, amounts to about 6 piculs only. There is none exported, and as the quantity produced is so small, it is mixed with the produce of the oak-fed worm, and therefore can hardly be called an article of commerce.

Two species of the ailanthus tree are found growing plentifully all over this province. On the wild one, which effuses an offensive odour, the worms feed, but as the Silk is inferior to oak fed, and the worm very unproductive, it is not much looked after. The other is generally found around houses and in gardens, grown as an ornamental tree. In the spring the young shoots and leaves are much sought after by the Natives, and used as a vegetable for food.

3°, by the worms (two species) fed with oak-tree leaves or on oak-trees, amounts to about 7,125 piculs of Wild Raw Silk.

In the spring, after the young worms are hatched, they are, if the weather is still cold, fed for some time in houses, but never longer than 10 days, and after that are placed on the oak trees, where they are left till the cocoons are ready for gathering.

The yield of 4 catties = 1,000 cocoons is from 11 taels to 17 taels of Silk.

From 1875 the export of Wild Raw Silk has varied greatly. In that year, 283 piculs only were exported; in 1876, the export amounted to 1,597 piculs; in 1877, 1878, and 1879, it decreased again to 161 piculs, 425 piculs, and 475 piculs respectively, but this year a considerable rise is noticeable, 1,361 piculs having been exported up to 30th June.

The export of Pongees has been steadily progressive. In 1875 it amounted to 1,083 piculs, from which quantity it rose to 1,798 piculs in 1879. During the first six months of 1880, 1,035 piculs were exported.

4°, by the wild worms fed on mulberry trees, amounts to about 15 piculs. The worms are indigenous to this province, and are known by the name of T'ien-lai-ts'an (天來蠶), or Heaven-sent silkworms; but as the production is so small and uncertain, no dependence can be placed on it.

This Silk, which is coarse and stiff, is called Sangchien-ssŭ (桑繭絲), and is for the most part used in the manufacture of fishing nets. Occasionally a few catties are offered for sale here, but not in sufficient quantities to become a staple of trade, and on this account it is generally worked up with other Wild Raw Silk.

4°.—The worm Attams Atlas, as also the worm fed on the camphor tree, are not known in this province.

5°.—So far as I am aware, there is only one—Messrs. CRASEMANN & HAGEN'S—establishment in Chefoo for reeling and throwing Silk from oak cocoons. This establishment also manufactures Pongees to a certain extent, but the principal object is the throwing and reeling Silk from oak cocoons for exportation to Foreign countries.

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6°.—No regular Native establishments to make Thrown Silk exist in this province. The plantations being small but very numerous and scattered all over the province, the owners in most cases prepare it themselves ready for the looms, and it is then taken in small lots to the different Silk marts and offered for sale there. The regularity in making Thrown Silks is, on account of the numerous manufacturers, seldom strictly adhered to; the number of threads varying very much in one and the same lot, and this is partly the cause of the unequal texture noticed in the inferior kinds of Pongees manufactured on Native looms.

7°.—There are only 10 looms employed in this province for the manufacture of Silk Piece Goods from white and yellow Silk. All these are at one place, Ch'ingchow-fu (青州府), 800 *li** west of Chefoo, where the following kinds of Silk Piece Goods are manufactured, but of which none are exported:—Liuchich'ow (六機綢), figured; Yangtsou (洋縐), figured; Lingtze (綾子), plain and figured; Such'ow (素綢), plain, mostly dyed light blue, and used for lining Native clothing.

The number of looms at work for the manufacture of Pongees from Wild Silk (oak cocoons) are about 950, and are distributed as follows, viz.:—Ch'angi-hsien (昌邑縣), 540 *li* west of Chefoo, 500 looms; Ninghai-chow (甯海州), 50 *li* east of Chefoo, 100 looms; Ch'ihsia-hsien (棲霞縣), 100 *li* south of Chefoo, 150 looms; Yent'ai (Chefoo) (烟臺), Messrs. CRASEMANN & HAGEN'S, with Foreign machinery—at present 200 looms.

8°.—The probable production in this province—

1°, of Thrown Silk, is 70 piculs of white and yellow Silk and 6,625 piculs of Wild Silk (oak cocoons).

2°, of Silk Piece Goods, from white and yellow Silk,—taking 350 clear working days per year with 10 looms, each loom producing 2 catties per day,—70 piculs. Pongees from Wild Silk (oak cocoons),—taking 350 clear working days, with 950 looms, each one producing on an average per day one piece = 60 feet (English) = 2 catties,—6,625 piculs.

9°.—So far as I can ascertain, the Taiping insurrection has not done harm to the qualities of Silk manufactures in this province, and the old establishments have been restored at the same places.

10°.—At the present time there are no places in this province where Silk is manufactured for the Imperial Court and rich families; Hangchow, Soochow, and Nanking are the principal places.

11°.—In this province there are two kinds of Silk goods which are little known in Europe. One is Light Cloth (plain and figured), which is made from white and yellow Raw Silk at Ch'ingchow-fu (青州府); it is nearly all consumed in the interior of the province, and none is brought to Chefoo for exportation. The other is the Shantung Pongee, made from the Wild Silk (oak cocoons), which is not much in favour in Europe yet, but here in China is much worn by Foreign ladies for morning and walking dresses, and by gentlemen for summer suits. Its

* 3 *li* about equal one English mile.

cost price varies from $3 to $6 per piece of 20 yards, and is only slightly above that of imported cotton dress-stuff, while it has the advantage of being more durable. It can be washed, the same as cotton dresses, without injury, losing by the process only slightly of its original lustre.

A great drawback in this manufacture is that it will not readily take dye, the Natives as yet not having discovered the chemical process to extract the lye; so far they have not been very successful, the colours all look faded, and some threads much darker than others, which gives the cloth, especially when made up into robes, a checkered appearance.

This is obviated at the looms of Messrs. CRASEMANN & HAGEN at Chefoo, where all the Pongees, before they leave the factory, go through a chemical process, after which they take the dye as readily as Silk Piece Goods made from mulberry cocoons.

The price, varying from $8 to $16 per piece, is certainly much higher than that of the Native manufacture, but then the Silk is considerably heavier and of far superior and finer texture, and is also made up in a great many different patterns; whereas the Native manufactures, without exception, are all plain. The Native Silk weavers have, since the opening of the Foreign factory, tried to imitate some of the common patterns, but so far unsuccessfully.

As will be seen by the accompanying samples, the finer kinds of Pongees manufactured on Native looms come only from Ch'angi-hsien (昌邑縣). The white is used mostly by the gentry for summer robes, some of it being also used by Foreign ladies in China for morning, summer, spring, and autumn dresses; the coarse and dyed kinds are made up into clothing and worn by the Native middle classes. The coarse Pongees from Ninghai-chow (甯海州) are, on account of their durability, mostly all worn by men of the lower classes.

There is only one kind made at Ch'ihsia-hsien (棲霞縣), and, as will be seen by the sample sent, of very coarse quality. This is also mostly used for the same purpose as that coming from Ninghai-chow.

Only one house here deals in Ch'ihsia-hsien Pongees, which are mostly exported to coast ports. Of the finer kinds of Pongees very little leaves the province; the export consists mostly of the coarser and inferior kinds.

The Pongees made by Foreign machinery range in price from 40 cents to 80 cents per yard, according to quality and weight. Some of these are made up in dress pieces of 20 yards each, but the greater number are made up in pieces of from 50 yards to 100 yards, principally for exportation to Foreign countries.

Samples of each kind of Silk Piece Goods and Pongees manufactured and dyed by Natives, to illustrate all the colours in use in this province, are forwarded herewith; and similar samples will be sent to the Statistical Secretary for transmission to M. RONDOT. The darker colours, especially the blue kinds, are worn by males; and the more gaudy kinds, *i.e.*, green, red, and yellow, by females and children.

A catalogue and set of samples of each Silk manufacture of this province, duly labelled with Chinese name, place of production, use, nature of primitive material, price, size, etc., are herewith transmitted; and a similar catalogue and specimens will be sent to the Statistical Department for transmission to M. RONDOT.

SILK.
CHEFOO.

Mr. Examiner LAND has taken a most intelligent interest in the queries propounded in your Circular under reply, and it is to his careful inquiries and research that I am indebted for the information which precedes. I have compared the particulars now submitted with those obtained from Chinese sources, and I believe they are substantially correct.

I have, etc.,

GEO. HUGHES,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

ENCLOSURE.

List of Samples sent.

No. of Sample.	Name of Silk.	Chinese.	Meaning of Name.	Place of Production.	Use.	Nature of Primitive Material.	Length and Breadth (Chinese Feet and Inches).	Value per Picul.
								$
	Liuchi-ch'ow :—	陸機綢						
1	Cherry	紅青	Woven from Silk grown on high land	Chingchow-fu	Native clothing	From worms fed with mulberry leaves ...	23½ ft. × 11 in.	613
2	Blue	深藍	,, ,,	,,	,,	,, ,,	,, ,,	613
3	,, light	品藍	,, ,,	,,	,,	,, ,,	,, ,,	613
4	Red	桃紅	,, ,,	,,	,,	,, ,,	,, ,,	613
5	Yellow	香黃	,, ,,	,,	,,	,, ,,	,, ,,	613
	Yangtsou :—	洋縐						
6	Blue, dark	深藍	Wrinkled Silk	Chingchow-fu	Native clothing	From worms fed with mulberry leaves ...	50 ft. × 14 in.	613
7	,,	品藍	,, ,,	,,	,,	,, ,,	,, ,,	613
8	,, light	二藍	,, ,,	,,	,,	,, ,,	,, ,,	613
9	Grey	藕灰	,, ,,	,,	,,	,, ,,	,, ,,	613
10	Red	桃紅	,, ,,	,,	,,	,, ,,	,, ,,	613
11	Green	官綠	,, ,,	,,	,,	,, ,,	,, ,,	613
12	Yellow	降黃	,, ,,	,,	,,	,, ,,	,, ,,	613
	'Hualing-tze :—	花綾子						
13	White	白	Figured thin Silk with a glossy surface	Chingchow-fu	Native clothing	From worms fed with mulberry leaves ...	23½ ft. × 11 in.	624
14	Blue	藍	,, ,,	,,	,,	,, ,,	,, ,,	624
15	Grey, light	淡青	,, ,,	,,	,,	,, ,,	,, ,,	624
16	,, dark	綠	,, ,,	,,	,,	,, ,,	,, ,,	624
17	Red	紅	,, ,,	,,	,,	,, ,,	,, ,,	624
18	Yellow, dark	黃	,, ,,	,,	,,	,, ,,	,, ,,	624
19	,,	降黃	,, ,,	,,	,,	,, ,,	,, ,,	624
	Suling-tze :—	素綾子						
20	White	白	Plain thin Silk with a glossy surface.....	Chingchow-fu	Native clothing	From worms fed with mulberry leaves ...	23½ ft. × 11 in.	624
21	Blue, dark	深藍	,, ,,	,,	,,	,, ,,	,, ,,	624
22	,, light	淺藍	,, ,,	,,	,,	,, ,,	,, ,,	624

Note.—10 Chinese inches=1 Chinese foot=$14\frac{1}{10}$ inches English=$35\frac{231}{500}$ centimètres. 1 picul=100 catties=$133\frac{1}{3}$ lbs. English=$606\frac{6}{10}$ kilogrammes. 1 catty=16 taels.

LIST OF SAMPLES SENT—*Cont.*

No. of Sample.	NAME OF SILK.	CHINESE.	MEANING OF NAME.	PLACE OF PRODUCTION.	USE.	NATURE OF PRIMITIVE MATERIAL.	LENGTH AND BREADTH (Chinese Feet and Inches).	VALUE PER PICUL.
								$
	Suling-tze:—	青紅淡青黃素綢品						
23	Cherry		Plain thin Silk with a glossy surface	Chingchow-fu	Native clothing	From worms fed with mulberry leaves	23½ ft. × 11 in.	624
24	Red		,, ,,	,,	,,	,, ,,	,, ,,	624
25	Green, light		,, ,,	,,	,,	,, ,,	,, ,,	624
26	Yellow		,, ,,	,,	,,	,, ,,	,, ,,	624
	Such'ow:—							
27	Blue, dark	藍藍綠紅	Plain Silk	Chingchow-fu	Native clothing	From worms fed with mulberry leaves	25 ft. × 10½ in.	602
28	,, light		,, ,,	,,	,,	,, ,,	,, ,,	602
29	Green		,, ,,	,,	,,	,, ,,	,, ,,	602
30	Red		,, ,,	,,	,,	,, ,,	,, ,,	602
	Yehts'an-ssŭch'ow:—	野蠶絲綢						
31	White, I	白上	Pongees made from Wild Raw Silk	Changi-hsien	Native clothing & Foreign dress-stuff	From worms fed with oak leaves	52 ft. × 14 in.	300
32	,, II	白中	,, ,,	,,	Native clothing	,, ,,	52 ft. × 13½ in.	188
33	,, III	白下	,, ,,	,,	,,	,, ,,	48 ft. × 12½ in.	110
34	Cherry, dark	黑紫	,, ,,	,,	,,	,, ,,	52 ft. × 13½ in.	310
35	,, light	紅紫	,, ,,	,,	,,	,, ,,	52 ft. × 14 in.	310
36	Blue	藍	,, ,,	,,	,,	,, ,,	,, ,,	310
37	Grey, dark	灰	,, ,,	,,	,,	,, ,,	52 ft. × 13½ in.	310
38	,, light	灰	,, ,,	,,	,,	,, ,,	,, ,,	310
39	Black	黑	,, ,,	,,	,,	,, ,,	,, ,,	225
	Yehts'an-ssŭch'ow:—	野蠶絲綢						
40	White	白	Pongees made from Wild Raw Silk	Ninghai-ch'io	Native clothing	From worms fed with oak leaves	55 ft. × 14 in.	165
41	Grey	灰	,, ,,	,,	,,	,, ,,	55 ft. × 13 in.	178
42	Cherry	紫紅	,, ,,	,,	,,	,, ,,	,, ,,	178
	Yehts'an-ssŭch'ow:—	野蠶絲綢						
43	White	白	Pongees made from Wild Raw Silk	Chihsia-hsien	Native clothing	From worms fed with oak leaves	54 ft. × 12½ in.	160
	Yehts'an-ssŭch'ow:—	野蠶絲綢						
44	White	白	Pongees made from Wild Raw Silk	Chefoo	Foreign dress-stuff, etc.	From worms fed with oak leaves	52 ft. × 18 in.	480

ICHANG.

No. 76.
1880.

CUSTOM HOUSE,
ICHANG, 13*th October* 1880.

SIR,

IN obedience to your instructions contained in Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

I have the honour to forward, enclosed, my Report on the production and manufacture of Silks in the provinces of Hupeh, Szechwan, and Kweichow.

Mr. Commissioner WHITE, of the Hankow Customs, having undertaken the task of providing specimens of Silk produce from Hupeh and Szechwan, I have consequently no samples to transmit from this port.

I have, etc.,

EDM. FARAGÓ,
Assistant-in-Charge.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

SILK.

ICHANG.

ENCLOSURE.

REPLY TO SOME QUERIES ON THE PRODUCTION AND MANUFACTURE OF SILKS IN THE PROVINCES OF HUPEH, SZECHWAN, AND KWEICHOW.

1°.—Raw Silk, distinguished as yellow and white, is produced—

1°, in the province of Hupeh, districts of Tangyang (當陽縣) and Tung'hu-hsien (東湖縣), the quality of the produce being considered as slightly inferior to Szechwan Silks.

2°, in the province of Szechwan, prefectures of Chiating-fu (嘉定府), Paoning-fu (保甯府), and Suiting-fu (綏定府). The Silk is of three different kinds, specified as fine, medium, and coarse.

There is, besides, a kind of coarse brown Silk produced in the district of Chênan-chow (眞安州), province of Kweichow, which material is usually employed for the manufacture of the so-called Szechwan Pongees.

2°.—The various kinds of Raw Silk derive their names mostly from the place of their production. In Hupeh the yellow Silk is called Hojung (河溶). The finest Raw Silk in Szechwan is designed as Paoningkuo-p'an (保甯過盤), or purified Paoning Silk; the medium qualities as Mienchow (綿州) and Jênshow (仁壽). The Kweichow brown Silk is styled as Yehts'an-ssŭ (野蠶絲) and Shanssŭ (山 絲).

3°.—The average production of the Raw Silk given—

1°, by the worms fed with mulberry leaves: in Hupeh, is about 2,000 piculs; in Szechwan, over 10,000 piculs; in Kweichow, 400 piculs or 500 piculs only.

2°, by the worms fed with ailanthus leaves: *nil.*

3°, by the worms fed with oak-tree leaves: *nil.**

4°, by the wild worms fed on mulberry trees: in Kweichow,† about 1,000 piculs.

4°.—Silk is only obtained in the afore-mentioned three provinces from the cocoons of the wild and house worms, termed in Chinese Yehts'an-chien (野蠶繭) and Chiats'an-chien (家蠶繭).

5°.—No Foreign machinery has as yet been adopted in either Hupeh, Szechwan, or Kweichow, the Silk-reeling establishments being still worked in the old primitive way.

6°.—Establishments‡ to make Thrown Silk, there are some 120 in Hupeh, of which more than 50 in the city of Chingchow (荆州), and the remaining in the Tangyang district. Szechwan

* In the statistics drawn up by Mr. RONDOT, 1,500,000 kilogrammes of Silk is said to be produced by the worms fed with oak-tree leaves in the provinces of Szechwan and Kweichow; whereas, according to the result of inquiries I obtained from the Natives (provided, of course, that they are trustworthy), the only kind of tree for silkworms known in Szechwan is the Sangshu (桑樹), or mulberry tree.

† The mulberry trees in Kweichow grow wild over the hills, and are called Ch'ingkang-shu (青杠樹) by the Natives. The caterpillars feed themselves on the trees, and go through their usual metamorphoses there, the ready cocoons being afterwards collected by the Chinese.

‡ No factories with large bodies of workmen are meant, but principally family-houses where the inmates are engaged in Silk industry.

possesses upwards of 2,000, most of them being situated in the cities of Ch'êngtu (成都), Chiating (嘉定), Ch'ungch'ing (重慶), and Shunch'ing (順慶). Kweichow has about 100, chiefly in the prefecture of Tsuni-fu (遵義府) and in the district of Chênan-chow (眞安州).

7°.—The number and locality of Silk-weaving looms in both Hupeh and Szechwan correspond with that of the Native establishments where Thrown Silks are made.

8°.—There is no Thrown Silk placed on the market in either Hupeh or Szechwan, all the ready Thrown Silk being made up locally into Piece Goods. The probable production of the latter is 200 piculs in Hupeh, 2,500 piculs or more in Szechwan, and a very small quantity in Kweichow.

9°.—The Taiping insurrection has done no harm to the quality of Silk manufacture in Hupeh and Szechwan. Although they had for a short time invaded a portion of these provinces, yet no establishments then in existence had been destroyed by them.

10°.—The city of Chêngtu (成都), in Szechwan, supplies a certain quantity of Silk materials for the Imperial Court, that place being renowned for the beauty of its Silk fabrics and the embroideries prepared there.

11°.—No specialities in the way of Silk manufactures are made in either Hupeh, Szechwan, or Kweichow.

EDM. FARAGÓ,

Assistant-in-Charge.

CUSTOM HOUSE,

ICHANG, 13*th October* 1880.

HANKOW.

No. 110.
1880.

CUSTOM HOUSE,
HANKOW, *21st October* 1880.

SIR,

I BEG to acknowledge the receipt of Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

and, in compliance with the instructions therein contained, to furnish you with the subjoined Report.

1°.—1°, two kinds of Raw Silk are produced in the province of Hupeh, white and yellow; and

2°, also in the provinces where there is no port open to Foreign trade, but with which Hupeh holds commercial intercourse, namely, Hunan, Honan, Szechwan, Shênsi, Shansi, Yünnan, and Kweichow.

2°.—The only names given to the Raw Silk that comes to the Hankow market are "white" and "yellow."

3°.—It is impossible to obtain even approximate statistics of the percentage of Silk produced—

1°, by worms fed with mulberry leaves;
2°, by worms fed with ailanthus leaves;
3°, by worms fed with oak leaves; and
4°, by the wild worms fed on mulberry trees;

but it is believed that the largest proportion—four-fifths of the whole yield—is produced by the worms fed with mulberry leaves, and the wild larvæ fed on mulberry and oak trees [Chêshu (柘樹)].

The total amount of Raw Silk produced in Hupeh is estimated at 6,000 piculs annually, and in Szechwan 15,000 piculs, of which quantities only a small percentage—amounting, perhaps, to one-tenth—is white Raw Silk. The other provinces referred to above are comparatively insignificant contributors.

Of the 21,000 piculs produced in Hupeh and Szechwan, one half finds its way to Nanking and Soochow, to partially reappear in the manufactured form, and the other half remains and is worked up at home.

By Chinese, silkworms are divided into two classes, those that feed on mulberry and oak leaves, and those that feed on the leaves of *Ailantus globulosa*. The former are designated Hsiangts'an (香蠶), or fragrant worms, and the latter Ch'outs'an (臭蠶), or fetid worms.

This unenviable title is derived from the disagreeable odour which characterises the leaves of the ailanthus, and which is imparted to the worms feeding upon them.

The Raw Silk exported from Hankow is much coarser than that produced in Chêhkiang and Kiangsu, although attempts have been made at Chiating-fu (嘉定府), in Szechwan, to improve its quality by importing worms from Huchow, and rearing them in the same manner as that pursued there. At first the experiment was successful, a larger proportion of white Silk being obtained; but, whether due to climate, soil, or food, or to the relaxed vigilance of the people, the second season saw a return to the former condition of things, the descendants of the imported worms spinning yellow instead of white Silk.

The Chêshu (柘樹), or silkworm oak, is extensively used in the late spring to feed the worms on, as the leaves contain a soft, milky pulp, said to be very nutritious and strengthening.

4°.—The statement that Silk is obtained—

1°, from the cocoon of a large worm (Attams Atlas); and

2°, from the reticular cocoon of a worm fed on the camphor tree,

cannot be substantiated.

The Natives appear to have had no experience of any but the usual varieties of wild and domesticated silkworms, and discredit the idea of there being any other Silk-producing agents than those already known.

5°.—There are no Silk-reeling establishments where Foreign machinery is employed within this or the adjacent provinces referred to above as having dealings with the Hankow market; neither does—

6°.—Thrown Silk appear to be known or used.

7°.—It is impossible to form even an approximate estimate of the number of looms employed in the Silk-producing provinces connected with Hankow.

In the districts where the rearing of silkworms is given attention to, almost each family finds employment for a spinning-wheel, which is, in fact, simply the ordinary apparatus used by the country people in spinning cotton for the manufacture of cloth. On this wheel of primitive construction the Silk is reeled off from the cocoons, and is then made up into skeins and disposed of to petty dealers, who in their turn supply the wholesale merchants.

At the port of Hankow there are seven families engaged wholly in Silk weaving, having a total of 20 looms; and at Chingchow-fu, in the same province, there are 50 families, with an estimated aggregate of 130 looms. These figures are exact, having been obtained from reliable sources; but I am not in a position to hazard even a guess at the number of looms employed in Szechwan, which is the principal seat of silk production, or of those in the other provinces specified above.

8°.—The production of Silk Piece Goods in Hupeh is estimated at 2,000 piculs, and in Szechwan at 6,000 piculs, annually.

The adjacent provinces also produce some, but in small quantities, and entirely for local consumption.

The export of Silk Piece Goods from Hankow in 1879 only amounted to 11.76 piculs, against an *import* for the same period of 1,267.93 piculs—a significant indication of the inferior estimation in which the home manufactures are held by the public.

SILK.
HANKOW.

9°.—The Taiping rebellion has had apparently no injurious effect on the quality of the Silk manufactures. So soon as tranquillity was restored, the country people returned to their former homes and resumed their previous occupations.

10°.—Hangchow, Nanking, and Soochow are the principal places where Silks are manufactured for the Court and wealthy classes; but a small quantity of Satin is also yearly supplied to the Emperor's household from Pahsien, in Szechwan.

11°.—There are few Silk goods made in this part of China that have any special features. With one or two exceptions, they are all inferior imitations of those manufactured in the provinces of Kiangsu and Chêhkiang, and are only used by the middle classes, who cannot afford a more costly article.

There is a species of Pongee produced in Kweichow which is made of the Silk spun by the wild worms found on *Ailantus globulosa*. It is of a greyish slate colour when undyed, is coarse in texture, and entirely deficient in lustre. It is usually dyed a dull plum colour, but is even then unattractive in appearance, and is not worn by any persons having pretensions to fashion or wealth.

Samples of 39 kinds of Silks, and of white and yellow Raw Silk and cocoons, are forwarded with this Report.

I have, etc.,

FRANCIS W. WHITE,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

ENCLOSURE.

LIST OF SAMPLES OF SILK MANUFACTURES, SATINS, CRAPES, SILKS AND VELVETS, SILK RIBBONS AND SILK COCOONS, FROM HANKOW.

No. of Sample.	NAME IN CHINESE AND ENGLISH.	PROVINCE.	DEPARTMENT.	Price per Chinese Foot.
				Tls. m. c. c.
1	天青川緞 Satin	四川 Szechwan	成都府 Chingtu-fu	0.3.2.0
2	硃紅川緞 Satin	四川 Szechwan	成都府 Chingtu-fu	0.3.2.0
3	通海緞 Satin	湖北 Hupeh	荆州府 Chingchow-fu	0.3.6.0
4	灰色巴緞 Satin	湖北 Hupeh	巴東 Patung	0.3.3.0
5	雪青巴緞 Satin	湖北 Hupeh	巴東 Patung	0.3.0.0
6	二藍巴緞 Satin	湖北 Hupeh	巴東 Patung	0.3.3.0
7	三藍巴緞 Satin	湖北 Hupeh	巴東 Patung	0.3.3.0
8	五采巴緞 Satin	湖北 Hupeh	巴東 Patung	0.3.3.0
9	天青荆緞 Silk Camlet	湖北 Hupeh	荆州府 Chingchow-fu	0.4.0.0
10	青連綢 Crape	湖北 Hupeh	巴東 Patung	0.1.2.0
11	湖色綢 Crape	四川 Szechwan	成都府 Chingtu-fu	0.1.2.0
12	菊黃綢 Crape	四川 Szechwan	成都府 Chingtu-fu	0.1.2.0
13	本白川綢 Crape	四川 Szechwan	成都府 Chingtu-fu	0.1.4.0
14	豆綠綢 Crape	四川 Szechwan	成都府 Chingtu-fu	0.1.2.0
15	雪白川綢 Crape	四川 Szechwan	成都府 Chingtu-fu	0.1.4.0
16	品紅綢 Crape	四川 Szechwan	重慶府 Chungching-fu	0.1.4.0
17	金黃綢 Crape	四川 Szechwan	嘉定府 Chiating-fu	0.1.2.0
18	品玉綢 Crape	四川 Szechwan	嘉定府 Chiating-fu	0.1.2.0
19	蘭色綢 Crape	四川 Szechwan	成都府 Chingtu-fu	0.1.1.0
20	白色綢 Silk, white, plain	湖北 Hupeh	荆州府 Chingchow-fu	0.1.5.0
21	六絲綢 Silk, blue, plain	湖北 Hupeh	荆州府 Chingchow-fu	0.1.0.0
22	貴州綢 Pongee	貴州 Kweichow	Wild worm Raw Silk.	0.0.8.0
23	銀灰綢 Pongee	山西 Shansi		0.0.8.0
24	河南綢 Pongee	河南 Honan		0.0.9.0
25	雲南綢 Pongee	雲南 Yünnan		0.0.9.0
26	棕色綢 Pongee	山東 Shantung		0.0.9.0
27	絲棉綢 Silk & Cotton Mixture	河南 Honan		0.0.6.0
28	絨 Velvet	湖北 Hupeh	漢口 Hankow	0.3.8.0
29	絨 Velvet	湖北 Hupeh	漢口 Hankow	0.3.8.0

SILK.

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LIST OF SAMPLES OF SILK MANUFACTURES, ETC.—*Cont.*

No. of Sample.	NAME IN CHINESE AND ENGLISH.	PROVINCE.	DEPARTMENT.	Price per Chinese Foot.
				Tls. m. c. c.
30	絨 Velvet	湖北 Hupeh	漢口 Hankow	0.3.8.0
31	絨 Velvet	湖北 Hupeh	漢口 Hankow	0.3.8.0
32	絨 Velvet	湖北 Hupeh	漢口 Hankow	0.3.8.0
33	絨 Velvet	湖北 Hupeh	漢口 Hankow	0.1.8.0
34	欄杆 Silk Ribbons.....	湖北 Hupeh	漢口 Hankow	0.0.1.0
35	欄杆 Silk Ribbons.....	湖北 Hupeh	漢口 Hankow	0.0.1.0
36	欄杆 Silk Ribbons.....	湖北 Hupeh	漢口 Hankow	0.0.1.0
37	欄杆 Silk Ribbons.....	湖北 Hupeh	漢口 Hankow	0.0.1.0
38	欄杆 Silk Ribbon	湖北 Hupeh	漢口 Hankow	0.0.1.0
39	欄杆 Silk Ribbon	湖北 Hupeh	漢口 Hankow	0.0.1.0
40	欄杆 Silk Ribbon	湖北 Hupeh	漢口 Hankow	0.0.1.0
41	欄杆 Silk Ribbons.....	湖北 Hupeh	漢口 Hankow	0.0.0.7
42	欄杆 Silk Ribbons.....	湖北 Hupeh	漢口 Hankow	0.0.0.7
43	欄杆 Silk Ribbons.....	湖北 Hupeh	漢口 Hankow	0.0.0.7
				Price per Picul
44	黃絲 Raw Silk, yellow ...	湖北 Hupeh	荆州府 Chingchow-fu.....	220.0.0.0
45	黃絲 Raw Silk, yellow ...	湖北 Hupeh	漢陽府 Hanyang-fu	200.0.0.0
46	白絲 Raw Silk, white ...	湖北 Hupeh	漢陽府 Hanyang-fu	280.0.0.0
47	黃絲 Raw Silk, yellow ...	湖北 Hupeh	武昌府 Wuchang-fu.....	210.0.0.0
48	黃白絲 Raw Silk, mixed, white and yellow	湖北 Hupeh	武昌府 Wuchang-fu	270.0.0.0
49	黃絲 Raw Silk, yellow ...	湖北 Hupeh	黃州府 'Huangchow-fu.....	190.0.0.0
50	黃絲 Raw Silk, yellow ...	四川 Szechwan.....	棉州 Mienchow.....	230.0.0.0
51	黃絲 Raw Silk, yellow ...	四川 Szechwan.....	保甯府 Paoning-fu	220.0.0.0
52	白繭壳 Silk Cocoons, white	湖北 Hupeh	武昌府 Wuchang-fu.....	80.0.0.0
53	黃繭壳 Silk Cocoons, yellow	湖北 Hupeh	漢陽府 Hanyang-fu	60.0.0.0
54	野繭壳 Silk Cocoons, wild...	貴州 Kweichow	... ...	8.0.0.0

KIUKIANG.

No. 88.

CUSTOM HOUSE,
KIUKIANG, *30th October* 1880.

SIR,

I AM in receipt of your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

and I now reply to the queries on the production and manufacture of Silk in China therein contained.

1°.—What kind of Raw Silk is produced—
1°, in the province of Kiangsi?
2°, in the provinces or districts where there is no port open to Foreign trade, but with which the province mentioned above holds commercial intercourse?

There is a very small quantity of Raw Silk produced in the northern part of the province of Kiangsi, but not enough to form an article of export. On referring to the Trade Reports of Kiukiang, it will be seen that in 1863 there were 38 catties, and in 1866, 2.25 piculs, of wild Raw Silk exported from this port; since that time there has been no shipment of this article recorded. That which went away in 1866 must have been of inferior quality, as it is valued at *Tls.* 30 a picul.

The Silk that is produced here is similar in appearance to Szechwan Silk, but it is inferior in quality. I refer to the northern part of the province, as I have been unable to procure information regarding the other portion of it.

This province does not hold commercial intercourse with provinces or districts where there is no port open to Foreign trade.

2°.—What are the names given to the various kinds of Raw Silk?

There is but one kind of Silk produced, which is called Paitu-ssŭ (白土絲), white Native Silk.

3°.—What is the average production of the Raw Silk given—
1°, by the worms fed on mulberry leaves?
2°, by the worms fed on ailanthus leaves?
3°, by the worms (two species) fed with oak-tree leaves, or on oak trees?
4°, by the wild worms fed on mulberry trees?

The worms here feed on mulberry leaves; I am therefore unable to state the average production.

SILK.

KIUKIANG.

4°.—It is said Silk is obtained—

1°, from the cocoon of a large worm (Attams Atlas) living in the Lo-fou Hills (Kwangtung);

2°, from the reticular cocoon of a worm fed on the camphor tree.

I have no knowledge regarding this statement.

5°.—How many, where, have establishments where Foreign machinery is used to reel Silk been started in China?

There are none here.

6°.—How many, where, do Native establishments to make Thrown Silk exist in China?

There are none here.

7°.—How many, where, do Silk-weaving looms exist in China?

There are a few Silk-weaving looms in this neighbourhood, from which are woven, from Silk imported from Szechwan, Hupeh, and Chêhkiang, narrow Silk ribbons, used as trimmings for clothing and girdles.

8°.—What is the probable production in each province—

1°, of Thrown Silk?

2°, of Silk Piece Goods?

There is no production of Thrown Silk or Silk Piece Goods in this province. There is a yearly importation of Silk Piece Goods of from 47 piculs, the lowest, to 316 piculs, the highest, during the past 17 years.

9°.—Has the Taiping insurrection done any harm to the quality of Silk manufactures? Have the old establishments been restored at the same places, or have they been transferred elsewhere?

I cannot learn that there were more manufactories of Silk at this place previous to the Taiping insurrection than there are at present.

10°.—What are the places where Silk manufactures for the Imperial Court and rich families are made at the present time?

There are none made here.

11°.—What are the Silk goods of a manufacture special to China or little known in Europe?

The Silk produced here is not woven into cloth; it is made into a small sized cord, which is used by the Chinese women in tying up their hair, and by the men in ornamenting their queues.

I have procured the following information regarding Silk culture in this neighbourhood.

Silk growing is not a speciality; what small amount is produced is under the care of the women and children of the villages. The eggs are hatched and the Silk is reeled during the second and third Chinese months. As the time for hatching approaches, the eggs are worn for some days on the persons of the women, underneath their clothing, the heat of the body benefiting them in some way. The worm lays its eggs on sheets of paper, which are then covered with other sheets of paper; they are then hung in baskets to the roofs of the houses until the season arrives for hatching.

I have procured 15 specimens of Silk ribbons, girdles, etc., which are manufactured here of imported Silk, and sent them to Mr. Commissioner HART, and requested him to inform me which of them should go to Lyons. As soon as I know which he has selected, I shall forward to you the duplicates. SILK. KIUKIANG.

I have, etc.,

GEO. B. GLOVER,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,

Inspector General of Customs,

PEKING.

No. 92.

CUSTOM HOUSE,

KIUKIANG, 11*th November* 1880.

SIR,

IN continuation of my despatch No. 88, of the 30th October, regarding Silk culture in China, I now have the honour to inform you that Mr. Commissioner HART has returned to me the specimens therein referred to, and informed me that 12 of them are not procurable at Shanghai. I have therefore arranged these and forwarded one set to the Statistical Department at Shanghai, and I now forward to you the duplicates, as per list enclosed.

I have, etc.,

GEO. B. GLOVER,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,

Inspector General of Customs,

PEKING.

ENCLOSURE.

MEMORANDUM OF TWELVE SPECIMENS OF SILK MANUFACTURES PROCURED AT KIUKIANG, AS CALLED FOR IN CIRCULAR No. 103, SECOND SERIES.

No.	CHINESE NAME.	MEANING OF THE NAME.	PLACE OF PRODUCTION.	USE.	NATURE OF THE PRIMITIVE MATERIAL.	PRICE.
1	雪青頂扣脚帶	Pale purple garter, superior quality.	Kiukiang	To bind ladies' feet.	Made of Silk from Huangchow-fu, in the province of Hupeh.	200 copper *cash* a pair.
2	元色頂京條	Black girdle, made in the superior style of the metropolis.	do.	Garter	do. do.	190 copper *cash* a pair.
3	寶藍頂京條	Sapphire girdle, made in the superior style of the metropolis.	do.	do.	do. do.	do.
4	雪白頂京條	Snow-white girdle, made in the superior style of the metropolis.	do.	do.	Made of Silk from Huchow-fu, in the province of Chêh-kiang.	do.
5	三鑲一寸白川邊	White Silk ribbon, three bordered, one inch broad.	do.	To trim ladies' garments.	do. do.	40 copper *cash* a yard.
6	一寸闊黃川邊	Yellow ribbon, one inch broad.	do.	do. do.	do. do.	do.
7	洋綠頂扣脚帶	Green binding garter, superior quality.	do.	To bind ladies' feet.	do. do.	200 copper *cash* a pair.
8	胭脂紅頂扣脚帶	Cochineal binding garter, superior quality.	do.	do. do.	do. do.	do.
9	一寸闊洋藍川邊	Foreign-dyed blue ribbon, one inch broad.	do.	To trim ladies' garments.	Made of yellow Silk from the province of Szechwan.	40 copper *cash* a yard.
10	一寸闊全元川邊	Jet black silk ribbon, one inch broad.	do.	do. do.	do. do.	do.
11	洋藍頂扣脚帶	Foreign-dyed blue binding garter, superior quality.	do.	To bind ladies' feet.	do. do.	200 copper *cash* a pair.
12	硃紅頂扣脚帶	Crimson binding garter, superior quality.	do.	do. do.	Made of Silk from Shangchêng-hsien, in the province of Hunan.	do.

WUHU.

No. 93.
1880.

CUSTOM HOUSE,
WUHU, *30th October* 1880.

SIR,

IN accordance with the instructions contained in your Circular No. 103, Second Series, of 10th May 1880:

Silk culture in China: reports upon, called for:

I have instituted inquiries regarding the points raised in the set of queries in the circular under reply; and, from the information obtained, it would appear that, as far as the province of Anhwei is concerned,—

1°.—Raw Silk is chiefly produced in the districts of Chinghsien (涇縣) in Ningkwo-fu (甯國府), and Ch'ingyang (青陽) in Ch'ihchow-fu (池州府). For the most part the colour is somewhat inferior, and the quality rather coarse. Small quantities are also produced among the villages of other districts—but only sufficient for local consumption,—where it is made up into common thread and tassels. In some cases the Silk is of so coarse a nature that it is only used for strings for musical instruments.

2°.—The names given to the Silk depend in a measure upon the way in which the "mosses" are packed. But it is generally known by the names "Chingyang" and "Wuhu," and sometimes it is called "a sort of Taysaam."

3°.—The average quantity of Raw Silk given is said to be—

a, 600 piculs to 800 piculs by the worms fed on mulberry leaves;

b, *nil* by the worms fed with ailanthus leaves;

c, *nil* by the worms fed with oak-tree leaves, or on oak trees.

I am informed by the Superintendent of Customs that in one or two districts a very few worms are fed on the leaves of the chê (柘), "Quercus, or silkworm oak of China," but that the Silk produced by these worms is hard and coarse, and only used for the strings of musical instruments.

d, *nil* by wild worms fed on mulberry trees.

The total quantity of Raw Silk exported from this port in Foreign bottoms has been, 43.32 piculs in 1877; 329.12 piculs in 1878; 381.87 piculs in 1879; and 450.71 piculs from 1st January 1880 to date.

4°.—The only Silk obtained in this province may therefore be said to be that produced by worms fed on mulberry leaves.

5°.—No establishments where Foreign machinery is used to reel Silk have been started in this province.

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6°.—The Native establishments in this province for making Thrown Silk may be said to be *nil*. Each district, however, contains two or three small establishments where thread and tassels for local consumption are made.

7°.—There are no Silk-weaving looms in this province, all the manufactured Silk Piece Goods sold here coming from Nanking (南京), Huchow (湖州), Hangchow (杭州), and Chinkiang (鎮江).

8°.—No Thrown Silk or Silk Piece Goods may therefore be said to be produced in this province.

9°.—The Taiping insurrection undoubtedly caused considerable temporary damage to the Raw Silk trade of this province, as many of the mulberry trees were destroyed by the rebels, and the people engaged in the trade were either killed or obliged to fly to other parts. Since quiet has been restored and fresh trees planted, the trade has gone on in its usual channel; but there has never been any trade in Silk manufactures.

10°.—Silk manufactures for the use of the Imperial Court and rich families are principally made at Nanking, Soochow, and Hangchow.

11°.—There are no Silk goods of a manufacture special to China or little known in Europe made in this province.

I have, etc.,

J. LLOYD E. PALM,

Acting Commissioner of Customs.

To

ROBERT HART, ESQUIRE,

Inspector General of Customs,

PEKING.

CHINKIANG.

No. 140.

CUSTOM HOUSE,
CHINKIANG, *29th November* 1880.

SIR,

IN pursuance of the instructions contained in your Circular No. 103, Second Series, I now have the honour to forward herewith my report upon

The Silk culture,

that is, the production and manufacture of Silks in Chinkiang and those neighbouring prefectures in this province for which Chinkiang forms more or less the chief commercial centre, or from which its Silk industry draws its supplies of Raw Silks.

The report thus deals with—

I.—The rearing of the insect:
  a, domestic silkworms;
  b, wild silkworms;
II.—The extrication of the filament;
III.—The spinning and weaving;

and is supplemented by a number of drawings, as per index, to illustrate the whole industry, as Sub-Enclosure 2. also by a number of samples, as per index, of the Silks and textile fabrics produced and manufac- Sub-Enclosure 1. tured in Chinkiang (鎮江), Tanyang (丹陽), Liyang (溧陽), Wuhsi (無錫), Ch'angchow-fu (常州府), Ihsing (宜興), Iching (儀徵), Hsüchow-fu (徐州府), and Nanking (南京).

Although I have spared no pains in making my Report as comprehensive as possible, the subject, I am afraid, is still one which, in order to secure real thoroughness (apart from the disadvantage under which a non-expert labours who attempts to deal with it), would nevertheless seem to require closer study than an ordinary person in charge of a busy public office can well afford to apply to it. I am forced to offer these remarks by way of apology, since I regret to say that after all the inquiries made and information collected, I yet feel to have mastered the subject only sufficiently to be able to appreciate the extent to which my Report falls short of doing approximate justice to such a highly interesting and important industry, and this notwithstanding that I have overstepped, by fully one month, the limit of time allowed for despatching the Report.

I have, etc.,

F. KLEINWÄCHTER,
Commissioner of Customs.

To
ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

SILK.
CHINKIANG.

ENCLOSURE.

CUSTOM HOUSE,
CHINKIANG, *October* 1880.

THE subject of Silk culture naturally divides itself into four parts: the rearing of the insect which yields the Silk; the extrication of the filament in a state fitted for the manufacturer; the spinning and weaving into textile fabrics; and the commercial arrangements arising out of the manufacture.

The first three divisions will, according to instructions, be more directly treated in this Report.

I.—THE REARING OF THE INSECT.

a. *Domestic Silkworms.*

Mulberry forms the chief food of the silkworm. There exist two kinds of mulberry trees: the sang (桑), which is the mulberry of the locality, commonly called the wild mulberry; and the lusang (魯桑), commonly called the "domestic" mulberry (fig. 1), which latter, though, is also known as the husang (湖桑), because it is brought here from Huchow (湖州), in the province of Chêhkiang (浙江). The leaf of the lu mulberry is thick and large, berries are rare, and its root is very firm; the leaves of the sang, on the other hand, are thin and small, and its berries are numerous, but its trunk is much stronger. Most of the mulberry plantations in this neighbourhood are begun with the ordinary sang or wild species, upon which the lu, or family mulberry, is grafted. The trees in these plantations are very firm in their root, very rich in leaves, and the plan of grafting is much valued. For these plantations high plains are selected; the trees do not thrive in low, wet ground, as their roots get spoiled. Berries of the sang are first sown during the fifth month, say the middle of June. Berries of the blackest kind are chosen for the purpose. They are put into water and broken up; those which float are cast out, and those only which sink are used. After having been dried in the shade—sunshine is supposed to delay their germination,—they are scattered in good soil, slightly manured, and then covered over with ashes. If covered with mud their germination is also protracted. After germination, they are kept constantly but slightly moistened with manure till the following spring, when the young trees have grown to about 1 foot in height. They are then transplanted at intervals of something over 8 inches from each other, being kept moist with manure and clear of all grass round them; and when their trunk is about the size of a finger in thickness, they are grafted with lu mulberry.

The grafting takes place during the second or third month (April–May), in fair, sunny weather. Large showers shortly after grafting completely spoil the growth. Cuttings from the lu mulberry of the thickness of lead pencils are used for grafting, the lower and harder part of them being pared off. After having been cut, they are covered with cloth to protect them against the sun and air. The earth is then loosened round the young sang tree, and cleared

away till some small roots appear; the trunk is then cut off level with the ground, an incision is made between the bark and the wood to a depth of about 1½ inches, and a small piece of bamboo is placed in the aperture. The cuttings, which are about 3 inches long, are pared off for about an inch at the lower end, leaving 2 inches with two sprouts at the upper end. These are then placed in the incision, which is kept open by the little piece of bamboo, and the latter is removed. The part pared off the cuttings with the knife must face the bark, as the juice of the tree passes through the bark; if the cutting faces wrongly, the tree will not grow. Mulberry bark is next wrapped thickly round, and the whole is covered up with earth, leaving only the two sprouts at the upper end uncovered; during this operation, great care has to be taken not to move the grafting out of position. After the sprouts have budded, one of them is removed, and the other, by the eighth or ninth month (October), will have grown to a height of 5 feet or 6 feet. It is then called a lu mulberry shoot (條桑), and is as good as those brought from Huchow and transplanted in December.

Although silkworms can be fed on the sang mulberry, the Silk produced is coarse, and the practice of grafting them is therefore generally adopted. When the grafts fail to sprout, the the original sang tree generally thrives, and the process is repeated the following year. Thus mulberry shoots can be easily raised here, provided that plantations of the domestic mulberry exist from which cuttings can be taken.

The young mulberry shoots are transplanted in December, at a distance of 5 feet or 6 feet from each other. They are planted in holes dug about 1 foot 6 inches deep and 3 feet wide, into which a strong and thick mixture of water manure and mud is previously poured. The shoot, the root of which has been washed clean with water and freed from all spoiled parts, is forced down, covered with earth, which is beaten down but not moistened again. Great care is taken to plant the shoots straight. At the beginning of the first month (February), these shoots (fig. 11 *a*) are cut down to a height of only 1 foot 6 inches from the ground. Afterwards two sprouts are allowed to grow, which by autumn will be 5 feet to 6 feet high. During the first month of the following (the third) year, the upper parts (fig. 11 *b*) are again cut off to about 1 foot 4 inches above the original stem. Again only two sprouts are allowed to grow on each branch, and these by the autumn will likewise have attained a height of 5 feet or 6 feet. These, in the first month of the following year, are again cut off in the same manner to a distance 1 foot 3 inches (fig. 11 *c*) from the second stem, and this process is continued till after the fifth year (figs. 11 *d* and *e*), when they are allowed to grow, and no cutting is again made till about the fourth month (May–June). Both stems and leaves are then cut off, and are called the first crop of mulberry for feeding silkworms. Even in case there should not be enough silkworms to consume all the leaves, they require to be cut off, as otherwise those produced next year would be thin and small. Subsequently two sprouts only are allowed to grow on each uppermost branch, and all sprouts underneath and on the trunk are rubbed off, so that at the autumn of that year there will be in all 16 branches (fig. 11 *e*) supplying leaves for next year's, *i.e.* the second, crop.

The uppermost sprouts must be carefully protected against all insects. As per fig. 11, the first stem or trunk of the tree is 1 foot 5 inches, and each of the second, third, and fourth branches, 1 foot 3 inches or 1 foot 4 inches, so that the whole tree is a little over 5 feet high, and can be easily attended to and cut by any ordinary sized man.

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During the fourth month of every year the uppermost branches are cut off within one-tenth of an inch level with the next lower branches; if left longer, the tree will be spoiled, and all extra sprouts are constantly taken off. Thus after some years time the tops of these 16 branches will gradually become shaped like fists, and when such is the case, three, four, or even five, sprouts are allowed to grow to bear leaves.

Each of the largest or full grown trees will bear between 50 catties and 60 catties, if planted in fertile ground and carefully looked after.

When the leaves of trees are found to have a yellowish tint, or are thin, or when there are many decayed branches, it is a sign that the tree has been injured by insects. There exist two such insects, the one growing within the bark, and the other without it. The former is called the sangniu (桑牛), literally, mulberry ox (fig. III). Its mouth has two nippers as sharp as scissors, and young sprouts when attacked by them fall to pieces. To lay their eggs they bite open the bark and place them inside. The larvæ look like young silkworms, but have sharp mouths; they are thus able to gnaw their way inside the tree, and as soon as they reach the roots the tree dies. The remedy adopted against them is that the tree is carefully examined, and where a kind of greasy matter is found to flow from it, the bark is split open, and the larvæ, which at this stage look like rice, are found and crushed. If they have already become insects, their passages are easily found out, and iron wire is thrust into the holes to crush them to death; if the holes are too deep and they cannot be so reached, wood oil is poured into the holes, by which means the grubs are effectually exterminated. The other insect attacks the leaves only, and is called sangch'ung (桑蟲), simply meaning mulberry insect (fig. IV). It is a small insect, and generally makes its appearance about the fifth or sixth month (June–July). The leaves of trees attacked by it, however rich and big, soon come to look like grasscloth; moreover, less leaves are produced next year. To destroy these insects, tobacco stalk is boiled, and its juice, mixed with water, is sprinkled over these trees. Care is taken to kill the insects as soon as they make their appearance, as later on they form small cocoons, and become moths, which again propagate still larger numbers for the following year.

The mulberry trees, when old and thick, are often covered with mosses, which are carefully scraped off, as otherwise the trees bear fewer and withered leaves.

The time for preparing the mulberry trees for next season's growth begins with the tenth month (November). All loose or crooked branches are cleared away, and an endeavour is made to give the tree a neat umbrella-like shape, as most auspicious for a growth of large and thick leaves. The mulberry grounds are kept clear of all long grasses. During the second, fifth, eighth, and twelfth months, they are richly manured. The manure of pigs, sheep, cattle, and horses is used, but nightsoil is preferred, while cotton seeds, oilcake, beancake, and the like are still warmer and richer. Small ditches are dug round the trees and filled up with manure, and covered with mud, with the object of forcing its effluvium better into the roots. After a number of years, mulberry trees decay and become hollow. Young shoots are planted close to these trees, and after two or three years the old rotten tree is cut away, so that no vacancy is left among the trees in the plantation. The longest-lived trees are said to last over 50 years.

As said before, these domestic mulberry trees are kept at a height of 5 feet or 6 feet. The leaves are out by about the second or third month (April), and fit for food when about 1 inch or

2 inches wide. At the time of cutting the branches, in the fourth month (May–June), the leaves (fig. V) are about 5 inches wide and 6 inches long. At the beginning of feeding silkworms, the leaves are picked off and cut small, which is not necessary later on, when the branches are cut off with them. The Silk produced by worms fed with the lu, or domestic mulberry, is brilliant and soft, and if properly dealt with can be worked into first-class Thrown Silk (上等絲經) (sample 26) for the manufacture of Pongees (綢) and Satins (緞).

As a general rule, it is greatly preferred in China to feed silkworms on the domestic mulberry, as above described. The sang, or so-called wild mulberry (fig. VI), is grown in the same way as the family mulberry, excepting that its shoots are neither grafted nor cut, but are allowed to grow wild. The largest trees attain to a height of from 50 feet to 60 feet, the leaves of which are only gathered with difficulty. (There is also a kind about one-half smaller than the domestic mulberry, with thin leaves, which easily wither.) These leaves are at times used to feed newly-hatched silkworms, or older ones, once or twice immediately after their stupor; but the worms will not touch them after having once tasted the domestic mulberry. Worms are also fed, however, entirely on the wild mulberry in the districts of Hsüchow-fu (徐州府) and Yangchow-fu (揚州府). In those districts Silk is mostly produced from worms fed on the wild mulberry leaf, simply because the value of cultivating the domestic mulberry is not sufficiently appreciated or understood there. These Silks (samples 11 and 23), like those from worms fed on oak trees, etc., are very coarse, and at best adapted only for the manufacture of third quality Silk Piece Goods.

In the villages surrounding Nanking, the silkworms are generally fed on both the wild and family mulberry leaves, in proportions of two parts of the former to eight parts of the latter. Of the Nanking Silks, that produced in the villages south of the city (sample 25) is the best; the Silk from those to west and north of it is inferior.

The silkworm (蠶, according to WILLIAMS, *Bombyx,* applied by the Chinese to all naked caterpillars which weave cocoons) undergoes several fixed changes. Immediately after emerging from their eggs they are called i (蟻), or ants, which they resemble in appearance; after a day or two they are called miao (蚙), *i.e.* newly-hatched silkworms; and after this, again, they become silkworms. The time of "moulting" is called mien (眠), or sleep, during which they cast their skins.

The southern silkworm, as a rule, has four periods for moulting, is very delicate and difficult to keep, but produces much Silk. The northern silkworm generally casts its skin three times, and, while less delicate, also produces less Silk. In either species, the last sleep, or "coma," lasts the longest.

The silkworms dislike water; to use the words of my informant, "they eat but do not drink." They love quietness, and recoil at any noise; they are very fond of heat, but object to dampness. There are 10 precepts laid down for breeding silkworms. The eggs when on paper must be kept cool; after having been hatched they require to be kept warm; during their period of moulting they must be kept hungry; in the intervals between their sleeps they must be well supplied with food; they should be placed neither too close together nor too far apart; during their sleeps they should be kept dark and warm; after they have cast their skins, cool, and allowed plenty of light; for a little time after moulting they should be sparely fed; and when

they are fully grown, ought never to be without food; their eggs (sample 1) should be laid close together, but not heaped upon each other.

Furthermore, great care is taken throughout to protect the silkworm from smoke. Leaves must not be given them wet, but after rain they must first be dried; leaves moist with fog are poisonous; nor are the worms allowed to eat withered or dusty leaves, or leaves which have been too long cut, and become musty or rotten. The smell of wine or vinegar and the like, moreover, is injurious to the worms.

Careful calculation is also made as to the quantity of worms to be reared up each season. One tael and three mace of young worms require about 20 piculs of leaves to feed them till full grown and in fit condition to spin their cocoons. In warm weather the worms will eat more, and attain that state quicker; in cold weather they will eat less, and will not spin so soon. They require to be fed day and night regularly. The above-mentioned quantity of worms, if ready to spin cocoons after 28 days, will produce 200 taels weight of Silk; after 29 days, 180 taels; while after 30 days, about 160 taels only. The feeding generally begins about the third month (middle of April). The temperature for silkworms is considered at 60° Fahrenheit mildest, at 70° warm, above 70° and 80° very warm, at 50° cold, and under 50° to 40° very cold.

The hatching of the silkworm eggs varies with the temperature of the different provinces. When the leaves of the mulberries have attained the size of a copper *cash* is the time for worms to emerge from the eggs. About 10 days previously, therefore, the papers containing the eggs are rolled up with the eggs inside, and wrapped round first with paper, and then with cotton about 3 inches or 4 inches thick. The rolls are then put in a warm place, or, as a better plan, under the blankets in the beds, and between the blankets when in use, with a view to the extra warmth emanating from the body of the sleeper. After six or seven days the rolls must be opened and examined; the eggs will have changed to a green colour when the worms are about to come out, and they require then to be opened every day. If five or six tenths are out, they may yet be wrapped up again; to keep the young worms for one day without food will not much matter, and on the following day the whole of them will probably have hatched.

These young worms are moved on to another piece of paper during daytime, and in a part of the room well sheltered against draught, by two men, who take hold at the four corners of the paper, with the eggs on it, and turn it over (so that the eggs are on the lower side), about 3 inches above the other paper. A third man, with a small slip of bamboo, then taps slightly the back of the paper to which the worms are attached, when they will fall on to the other. The young worms are then swept gently together in a bamboo basket with a fine feather or brush (figs. VII and VIII), care being taken not to crowd them too closely. If any of the eggs still remain unhatched, the paper may be rolled up again and treated as before, and the remaining worms will come out on the following day; but these are then placed in a separate basket, and not put together with those of the preceding day, to avoid the trouble arising from having worms of different age.

A newly-hatched silkworm is as fine as a hair. Immediately under its head there are four legs, a little beyond on the body there are six more, and again six more near the end of the tail; their whole length is about one-tenth of an inch, and their colour is black.

When the young worms have been placed in the baskets and distributed evenly, mulberry leaves are given them. These leaves, as said before, are picked fresh from the trees, piled together on a chopping-pad (fig. IX) made of straw (wooden chopping-blocks cannot be used for fear of fragments of wood being mixed with the leaves), and with a sharp knife cut small, and then passed through a sieve (fig. X). Great care is taken to do this cleanly, and the men who handle the leaves previously wash their hands. The worms are supplied with leaves five or six times day and night. The leaves are spread lightly, and the baskets are kept on stands (fig. XI) and surrounded by some curtains to protect the worms against draught.

After one or two days' feeding, the worms change to a brown colour, and after five days more they become yellowish white, and are about two-tenths of an inch long and about twice their former thickness.

As the worms grow larger and are found to be crowded too closely, they are picked up with two little bamboo sticks (fig. XII) and distributed in several baskets.

After two or three days, and during daytime, the remains of mulberry leaves and the discharge from the worms are cleared away. This is effected by spreading a layer of fresh mulberry leaves over the worms, and when the worms have all crept on to them, by removing them gently with the leaves into other baskets.

When the worms are three days old they must be constantly supplied with leaves. On the fifth day, besides turning to a yellowish white colour, a fine horn also will be dimly observable on the tip of the mouth. They will then stop feeding and undergo their first moult; before they do so, leaves are supplied as usual till the greater part have entered upon their sleep; rice-husk ashes are then sifted over them, which are covered again with leaves. Those which have not entered on their sleep make their way through the ashes on to the leaves, and are removed to another basket. They are therein fed a few more times till they also sleep, and are treated as before, and those thereafter remaining feeders are thrown away as useless, as they will never moult. Those that are asleep are separated with a pair of small sticks, some more ashes are sifted over them, and they are put away in a quiet place till they have cast their skins. Each kind of worm is kept separate. The worms remain without eating for two days and nights; the change of their colour to a light yellowish tint, and their mouths having become rather broader, are the signs that they have cast their skins. After they have cast their first skin they are about a quarter of an inch long. Leaves are not given them immediately; this is done only after it has been ascertained that none remain asleep under the ashes. They are then fed at regular intervals; two days later, if the weather is very warm, leaves may be given constantly, and six or seven times during the night. After five days they will be about four-tenths of an inch long, become yellow, stop eating, and cast their skins a second time, and the same process as before described is followed.

By the time that the worms have cast their second skin, they have grown to half an inch, and are white in colour; the leaves upon which they are fed are then cut coarser. In about four or five days' time their colour will change to a yellowish white, when they stop eating and enter upon their third moult, and are about six-tenths of an inch long. After having cast their third skin they attain a length of seven-tenths of an inch, and again become white. After this they eat much quicker, and the leaves may be cut coarser still. Again, in four or five days more they

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will change to a yellowish white colour (being by this time about nine-tenths of an inch long), and the horn on their mouth is clearly developed; they then again stop feeding and enter upon "the long repose." This they undergo just as the previous ones, but the treatment of the worms is different. Until they have all entered upon their repose, leaves are given them as usual. Whole leaves are put over the worms that are asleep; those that are not yet ready will crawl on to those leaves without disturbing the former, and leaves are continually placed over the sleeping worms, so that gradually they lie under several sheets of leaves. Those that still remain over on the top are then rolled up in leaves and removed to other baskets, where they will also fall asleep within half a day or so longer. All the sleeping worms are then removed to flat-bottomed trays (fig. VIII) and weighed, in order to ascertain the quantity of mulberry leaves which will still be required before they reach the condition to spin cocoons. For 5 catties of such worms, the estimated consumption is 100 catties of leaves. The worms thereafter are put into baskets, ashes are sifted over them, and, again, above the ashes chopped straw to about $1\frac{1}{2}$ inches thickness is spread. They must remain well, but not too thickly, covered up till their stupor comes to an end. This will happen in hot weather after a day and night; if the weather is cold, it sometimes lasts for two or three days; they will then be about $1\frac{2}{10}$ inches long, and white in colour. They must all have revived ere leaves are again given them. They are then fed with very coarsely-cut leaves, and later on the whole branches with leaves are given them. Their excrements and the remnants of leaves are daily cleared away, but in a different way to that before described.

A hempen net (fig. XIII) is put over them, upon which mulberry branches are placed, and the worms will all crawl up through the meshes of the net on to the leaves, and, after having been fed on them twice, they are transferred with the net to another basket. This is afterwards done twice a day. After about two more days, the worms eat much quicker, and leaves are constantly supplied. They will attain maturity in about five days, and the more they eat during that time the better, as for every mouthful of leaf it is calculated a mouthful of Silk is returned, and silkworm-keepers feel disconsolate if their worms at this stage do not consume much. At maturity the worms (fig. V) are about 2 inches in length.

The worms which have reached the stage for weaving cocoons become a little yellow in colour, and their bodies are then bright and transparent, and shrink to about $1\frac{8}{10}$ inches in length; they are then called full grown, and covered up with whole leaves. Those that are not quite mature yet will continue to feed, but the others make their way to the surface and hold up their heads as if looking for a place to spin on. These are then taken away. Leaves are continually added, and the same process is followed till all are mature. Care is taken to remove them at the proper time. If removed too soon they will not spin for a day or two, and if too late, they spin thin Silk.

The worms for weaving their cocoons are placed on so-called silkworm hills (蠶山). To have fine weather at the time of the removal of the worms is considered very fortunate, as the cocoons will be quickly woven, and be easily reeled. During dull weather, fires must be placed all round, lest the worms cease spinning on the hills.

These silkworm hills (fig. XIV) are constructed of straw bundles (tied in the middle) and placed perpendicularly on reed mats, the latter being supported by trestles about 2 feet

from the ground. The bundles of straw are placed together in rows, so that they support each other. The mature worms are then put upon them, care being taken not to crowd them too closely. Each bundle of straw will hold from 60 to 70 worms.

The silkworms have finished spinning in about five days. The cocoons are taken off in the same order as the worms were put on. Each bundle, though, is previously examined, and any black or putrid worms are first removed, in order to avoid the cocoons becoming soiled. While being taken off they are at the same time assorted, and the following are kept separate:—

Flossy cocoons (綿繭), the product of worms which have sore mouths, and which, in consequence, spin slowly and irregularly, and make soft cocoons.

Maggot-bitten cocoons (蛆鑽繭), the product of worms stung by flies, or upon the bodies of which flies have laid their eggs. After the cocoon is made, the maggot emerges from it by piercing through the cocoon.

Sick or filthy cocoons (映頭繭), made by worms that, on having finished weaving, die, instead of changing into chrysalides, and discharge filthy water.

Concave cocoons (草凹繭), such as stuck close to the straw or mat, and got flattened or misshapen.

Urine-stained cocoons (尿緒繭), dirted by the urine of the worms inside.

Dupions or double cocoons (同宮繭), produced, when the worms were placed too close, by two or more worms together.

While being taken off, the cocoons are at the same time freed from the loose Silk around them; the cocoons are then spread out on large trays (fig. VIII) and placed in a cool spot. All the just-mentioned kinds are unfit for reeling, and made up only into refuse Silk (sample 2), or sometimes into a very inferior kind of Silk.

From 100 catties good cocoons, 9 catties of Silk are reeled off; this process is, if possible, completed before the time for the moths to pierce through the cocoons, which they do after 10 days. A quick hand, with a double-reeling machine, reels about 1½ catties of Silk per day; thus, 100 catties of cocoons are about six days' work. Unless sufficient hands can be employed to finish reeling in time, the cocoons are steamed, to kill the chrysalis before reeling; but the Silk from steamed cocoons is not so good and shining. The steaming consists in putting the cocoons in vessels with hot water, and keeping them therein over a fire till the water boils over. The cocoons are thereafter spread out to dry in the air.

A portion of the cocoons from the upper parts of the straw bundles are reserved for breeding, care being taken to select those only which are hard, clean, and white. They are gently spread over a tray and kept in an airy spot; after about 10 days, the moths creep out during midnight: the cocoons are carefully watched at this time, in order to at once separate the males from the females (fig. XV) as they come out. Moths with their wings stuck together, those with red bellies, and those that are incomplete at the tail, or yellow and hairless, are sick, and cast out. After a sufficient number of males and females have been obtained, these are placed together and allowed to pair. They are then taken pair by pair on to another tray, and placed in a spot well sheltered against draught; the slightest draught will separate them and confuse the whole tray. Should pairs separate, they are put back again with those that have not yet paired, where they

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will unite again. After eight hours' pairing, they are separated, and the male moths removed. The females are stirred to make them move about, in order that they may urinate. They are thereafter placed on thick paper, prepared beforehand, and hung up against the wall, in proper distances from each other, to lay their eggs; beginning at 6 P.M., they have finished doing so by 9 P.M. The female moths live afterwards, without eating, for five days; they then die, and are buried. The papers with the eggs are taken down and exposed to the wind; being first yellow, they turn green, and afterwards black, when they are washed with clean water, dried, and folded up, tied together, and hung up. On the twelfth day of the twelfth month (middle or end of January), the eggs are put into cold tea for a quarter of an hour; they are then placed on trays, and salt is sifted over them so thick that the eggs cannot be seen. So prepared, they are put in the open air for one night, and it is considered best if snow or dew falls upon them. Every trace of salt is thereafter washed off; they are then dried (sample 1), folded up, and hung on the walls as before till about the third month of the following year, when they are hatched, as described before.

b. *Wild Silkworms.*

Wild silkworms are fed on the hsiang tree (橡 樹), also called hsiangwan tree (橡 椀 樹) —according to WILLIAMS, the chestnut oak, *Quercus sinensis;* on the lih tree (櫟 樹)— according to WILLIAMS, a species of scrubby oak, *Quercus serrata?;* and on the chê tree (柘 樹), —according to WILLIAMS, the *Quercus*, or silkworm oak of China.

The last mentioned, the shih tree (fig. XVI), or silkworm oak of China, does not grow over 5 feet or 6 feet in height, and is common round the villages, without being purposely planted for its leaves. The trunk of the tree is straight; bows are made from the wood, and the root furnishes a dye, once used for making the imperial yellow. During the second month (March) its leaves are out, and about 1½ inches wide and about 2 inches long; they are much stouter and thicker than mulberry leaves. Silk produced by worms fed on them is, however, hard and unfit to be woven into Pongees; it is used for making Silk strings (絲 紘) (sample 3) only. It is only when mulberry leaves are scarce that these leaves are given instead to the domestic silkworms, four or five times immediately after their having been hatched, and after they awake from their third and fourth stupors; as once having tasted mulberry leaves, the worms would not touch the shih-tree leaves again. A great saving of mulberry leaves is, however, at times effected by the above-mentioned procedure.

In this province, Kiangsu (江 蘇), however, the shih-tree leaf has never been used specially for feeding silkworms. Only strings (as just said) are made of the Silk produced by worms fed on the shih tree. These come to Chinkiang from other provinces, and are worth about *Hk.Tls.* 0.2.2.0 per tael weight; they are not, however, easily saleable, not more than about 100 taels weight being sold here per annum.

The leaves of the hsiang tree (fig. XVII), or chestnut oak *(Quercus sinensis)*, are also out during the second month (March), and about 1 inch wide and 3 inches long. Its seeds are eatable. The seeds are sown in about the ninth month (November), in holes 3 inches or 4 inches deep, and slightly manured. They are kept covered with a plank till next spring, and in the third month (April) the young shoots are about 2 inches or 3 inches long, and transplanted. No

grafting or cutting takes place till after three years, by which time they have grown large enough, and the leaves are cut as food for silkworms. Many of these trees are also found around the villages and in the forests, and are used for firewood merely.

The leaves of the lih tree (fig. XVIII), also a species of oak, are twice, and its seeds three times, the size of those of the hsiang tree. Its cultivation is the same.

Two crops of cocoons are gathered from wild silkworms annually. The following process is followed in breeding them. Their cocoons, spread in a square basket, are placed in a room during the first 10 days of the year, say February, the doors and windows of which are well shut. No ventilation is allowed. A fire is lighted, and the room is kept at a constant warm temperature till the middle of the second month, say for 35 to 40 days; 40 days are estimated for the moths to come out. Their appearance, it is said, generally takes places between 8 and 10 o'clock in the morning, and the males and females are allowed to cohabit till 4 in the afternoon, when the male moths are removed. Meanwhile covered baskets (fig. XIX) of 3 feet in diameter and 1 foot deep are kept in readiness, in which the female moths are placed, and left for three or five days to lay eggs, after which they are removed. These baskets are kept hung up in a room till the leaves on the trees have grown to be more than 1 inch long, when the rooms are warmed again, and after about five or six days the young silkworms are hatched. These also, it is said, make their appearance between the hours of 8 A.M. and 10 A.M. The baskets with the young worms are then placed in a water drain, the baskets being weighed down a little by means of a stone fastened to a string at the bottom; the baskets are filled with leafy twigs, to which, by their smell, the worms are attracted. If the eggs remain unhatched, the baskets containing them are taken back and hung up again in a warm room till the worms come out, and the same process as before is gone through. Fresh leaves are continually supplied, and great care is taken not to leave the worms hungry. They are also carefully protected against injury by birds, bats, and the like; grass and matsheds are erected for the purpose, and, as my Chinese informant heroically expresses it, "shot, bows, and spears" are prepared to guard them by day and night. Later on, when the leaves on all the trees are fully out, the worms are removed to them to continue their feed upon them themselves. Leafy branches with silkworms upon them are taken in baskets to a tree well supplied with leaves, and the branches with the worms are tied to it; and in the same way, when the leaves of one tree have been consumed, the branches to which the worms remained attached are cut off with a sharp knife or scissors, and affixed to another tree. These worms have also three stupors during which they must not be moved. They can endure wind and cold, but cannot stand constant rain. The worms spin themselves into cocoons on the trees (fig. XX); these cocoons are taken down during the first 10 days of the fifth month, say early part of June. The cocoons reserved for the second crop are hung up in an airy place, and in eight or nine days, between 5 and 6 in the morning, the moths will come out; these, as before, are allowed to pair till 12 o'clock, when the males are removed. The female moths (fig. XXI), on the following day, are tied by one leg to fine threads fastened to trees, to lay their eggs. These latter will be hatched about the middle of the following month, and they are then taken care of and guarded in precisely the same manner as before described. In the eighth month (September) they will have formed into cocoons, of which, again, a portion is reserved and kept over winter, to be hatched next year.

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These wild silkworms (野蠶) (fig. XXII) are smaller than the domestic worms (家蠶) (fig. V), and are of a greyish black colour. The worms shown on the drawing represent those which have passed their third sleep, and in the condition to make cocoons within seven or eight days.

No wild silkworms are bred in this province; nor are silkworms in this neighbourhood reared on the castor-oil tree, ailanthus, or camphor-tree leaves.

II.—THE EXTRICATION OF THE SILK FILAMENT (REELING) FROM COCOONS.

The machines (fig. XXIII) used for reeling, though ingenious enough from a certain standpoint, are yet for all that of a sadly primitive description.

The main body (fig. XXIII *a*) of the machine consists of four poles; of these, the two hinder ones are about 2 feet 4 inches high, with notches on the top to hold the reel, while the left front pole—the part facing the person reeling being called the front—is 2 feet 7 inches in height, and has a hole on the top to admit the pressing rod, and the right front pole is 2 feet 3 inches high, and is furnished with a peg, upon which the driving pulley is set. The reel (fig. XXIII *b*) is made of hard-wood; its main bar, or "axle," which is 2 feet 5 inches long, has four pairs of wooden sticks (spokes), 1 foot long, joined at their tops by cross-bars projecting from it. The portion of the machine which contains the rollers consists of a wooden frame (fig. XXIII *c*), in the upper part of which the rollers, made of bamboo, are arranged upon a revolving bar; there are eyelets attached to the lower bar, through which the Silk filaments from the cocoons pass. These eyelets, as a rule, are made of copper wire beaten flat at the end, with a small hole pierced through. The pressing rod (fig. XXIII *d*) is a piece of wood 2 feet 5 inches long, fitting into the hole at the top of the left pole and on to the head of the driving pulley, which latter itself revolves on the peg of the right front pole of the main body. The driving pulley (fig. XXIII *e*), which is made of mulberry-wood, is 3 inches thick and 6 inches in circumference, and the driving band runs round it and the projecting shaft of the reel. To the top of the driving pulley the one end of the pressing rod is fastened. The combs (fig. XXIII *f*) are made of bamboo, about 6 inches long and 2 inches wide, shaped at one end like a comb. The treadle and driving rod (fig. XXIII *g*) is made of wood, about 1 foot 5 inches long and 6 inches broad, forked and joined by a peg to another piece of wood, 8 inches long, with a footboard for setting the machine in motion. The stove (fig. XXIII *h*) is an ordinary Chinese charcoal stove made of clay. The furnace (fig. XXIII *i*) is either built of bricks, or consists of an earthenware jar, with a kind of door to it, covered with lime and mud inside and out; the pan is set into it with clay and mud, to prevent the escape of smoke between it and the furnace. The chimney is made of split bamboo (basket-work), about 6 inches or 7 inches in diameter below, smaller at the top, and led out through the roof. The aperture or door to the furnace is built round with bricks, upon which the chimney is set. Firewood is burned in the furnaces, as being cheaper than charcoal.

Clean and white cocoons are selected for reeling, to produce a bright and shining Silk fit for the manufacture of first-class quality Silk Piece Goods.

The water used for reeling Silk is taken from mountain streams, as being the cleanest; the water from wells is never used; and if mountain water cannot be had, river water is taken, which is cleaned by putting a pint of live shellfish to one jar of water. There is a special kind of shellfish, called the pure water shellfish (清水螺) (fig. XXIV), found everywhere in ponds, wells, and creeks. They first all sink to the bottom of the jar, and then by degrees make their way up its sides, consuming gradually all impurities in the water within half a day or so. After the clean water has been drawn from the jar, the shellfish are cleansed and put to the same duty again.

The reeling machine is put close to the furnace, and at the same level with it, and care is taken to secure the machine, so that it works steadily and without shaking in any part of it. A wooden tub is placed near the furnace for the reception of the chrysalides after the Silk has been reeled off them.

One man attends to one machine. The cocoons are put into the pan, which is filled with hot water, and stirred with the comb till the ends of the Silk filament of the cocoons get loosened. The rough parts of the cocoons are then cleared away; the clean filament of Silk is taken hold of with one hand, and, the cocoons being steadied with the help of the comb in the other, the filament is passed through the little eyelet, thence over the roller and under the hook upon the pressing rod on to the reel. The object of the pressing rod is to make the Silk run straight round the reel. The treadle is thereafter set in motion with the foot. As each cocoon is reeled off, it is replaced by another immediately that the cocoon becomes thin like paper, and the chrysalis is visible, lest the latter might break and dirty the Silk.

Threads made with six or seven cocoons (海甯細絲經) (sample 26) are classed the finest. The lower grades range as follow:—Threads made from 11 or 12 cocoons (嘉興絲經) (sample 9), from 15 or 16 cocoons (溧陽絲經) (sample 18), from 18 or 19 cocoons (揚州絲經) (sample 10), and from 20 cocoons (宜興絲經) (sample 21) or more, which last are classed as the coarsest.

When the filament of a cocoon breaks, it is at once re-connected or replaced by another; the filaments of more cocoons are also added, in case the filament is found to be too thin. The small charcoal stove is placed under the reel in order to dry the Silk filaments, which would otherwise stick together as they run over the reel. Care has to be taken not to place the stove too close, and that no sparkles or smoke rise from it, for fear that the Silk get burned or smoked black. Likewise, in case the water in the pan becomes dirty, it is renewed; so also the driving band is kept constantly moist with water, to keep it tight, to secure that the threads run straight over the reels.

Silk so reeled varies from 10 to 20 taels to the skein in weight. The skeins are taken off the reel, together with the cloth cover, by driving the main bar of the reel with a hammer in an opposite direction to the spokes, by which means the latter will fall off.

All the above rules are most minutely attended to, so that the Silk may be of equal thickness and shining. A quick hand can reel in one day under the above system about 20 taels weight fine, or 30 taels coarse Silk.

In some places the Silk is reeled with the hands merely off the cocoons placed in cooking pans containing hot water, but such Silk is very uneven, and far from clean; the Silk even of white cocoons, if reeled in this way, is black and dull, and fit at best only for sewing thread.

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Reeling Silk with Foreign machinery is unknown in Chinkiang and its neighbourhood; the industry could receive much benefit by the use of such superior implements.

Silkworm breeders have to toil for more than 30 days in rearing the cocoons, and each catty of cocoons will produce $1\frac{3}{10}$ taels weight of Silk, averaging in value 260 *cash* only. The industry, however, still gives fair returns to the breeder who can reel his own cocoons; otherwise, he has to pay 26 *cash*, or about 10 per cent. of its value, for the reeling, and thus the reeler is said to enjoy the larger portion of the profit of the breeder.

However, the people are beginning to appreciate the manifold advantages that would accrue to them from the introduction of Foreign machinery, and it has been proposed to try the venture, if the cost be not too high.

The cocoons unfit for reeling, such as moth-bitten, dupions, flossy, maggot-bitten, etc., as before enumerated and described, are made into refuse Silk. For this purpose they are put into clean water, which is changed several times in a day, and in which the cocoons are beaten about, to clean them of all dirty substances. Water is then poured on some straw ashes and boiled; as soon as it boils, the cocoons are thrown in and boiled in it. Half a cup of bean oil is added, the cocoons are continually stirred, and, after a little, another half cup of oil is added. After the cocoons have thus been thoroughly boiled, they are taken out hot, placed in baskets, and washed in the streams, and finally dried in the sun. They become soft and flossy like cotton, fit for making refuse Silk (絲綿) (sample 2), or are also spun into yarn of uniform size, not too fine, and woven into Pongees (sample 4). This method is followed chiefly in Chêhkiang (浙江), whence all refuse Silk and Pongees come. In the neighbouring prefectures of Nanking, Chinkiang, Yangchow, Changchow, and Hsüchow, the people do not know that process, and all cocoons unfit for reeling are either sold to Chêhkiang manufacturers, or sent to Shanghai for sale to Foreign merchants.

The wild-worm cocoons are treated as follows. Boiling water is poured over charcoal ashes and thickly mixed with the latter. The mixture is kept boiling. About $1\frac{1}{2}$ catties of cocoons are placed in sieves (fig. X), and the ash water is poured over them several times; the cocoons are themselves transferred to the pan, into which the ash water has been poured back again. After this process has been followed several times, the cocoons are felt with the hands. When the Silk is found soft to the touch, the sieve with the cocoons is placed in the pan, and they are steamed for a few minutes. The cocoons are afterwards taken out and attached to sticks (fig. XXV), 10 or more on one stick, washed with water till clean from all ashy matter, and then dried. The Silk is thereafter spun off slowly with an ordinary cotton-spinning machine like cotton, and woven into Pongees.

As mentioned before, wild silkworms are not bred here, nor are their cocoons spun in this neighbourhood. The industry is confined chiefly to Shantung (山東) and other northern provinces; consequently I have failed to get any information of even approximately reliable nature of the extent of that industry. Most of the Pongees also in the market here come from Shantung; and though here and there in the Nanking prefecture and neighbourhood wild silkworms are reared, the extent to which this is done is so insignificant that their Pongees are also called Shantung Pongees (sample 5), nor is there any perceptible difference between the two.

III.—SPINNING AND WEAVING.

The manufacture of Silks in China is of very ancient date. It does not lie within the strict sphere of this Report to specially deal with its age. Suffice it, then, to merely state in passing that it is said to have been in its most flourishing state for a period of over 4,000 years previous to the introduction of cotton from India, at the beginning of the YÜAN (元朝) dynasty, A.D. 1260. Owing to its cheapness, preference was given to the cultivation of cotton. The Silk industry was more and more neglected, and indeed, during the 400 years intervening between that and the present dynasty, was nearly abandoned. The chief Silk centres remaining during the last-mentioned period were Szechwan (四川), Honan (河南), Kwangtung (廣東), and Chêhkiang (浙江); these districts, however, produced only sufficient Silk for the supply of the Government looms and for local consumption, while in all the other provinces the manufacture of Silks was entirely neglected.

It was subsequently, with the advent of Foreigners and the ever-increasing demand for Silks for exportation abroad, that the industry was taken in hand again and continued to increase, and this all the more so as the people themselves rose with it in general prosperity, and enabled them also to wear again the more costly Silk garments. At the present time it is still expanding year by year; but there are many places where the industry has been completely abandoned, and where it would seem next to impossible, at least for a very long time to come, to restore it to its former state.

In Chinkiang the Silk industry had been long neglected till, in the beginning of the reign of HSIENFUNG (咸豐), A.D. 1851, the local authorities fostered it, distributing, free of cost, young mulberry shoots, and teaching the people again how to plant the mulberry and breed silk-worms. But before long the Taiping rebellion put an end to it again. Subsequently, however, in 1871, once more the local authorities interested themselves in it. Young mulberry shoots were again procured from Huchow (湖州) for free distribution, and the people were encouraged to engage again in the cultivation of Silk.

The manufacture of Silks, for the reasons given above, viz., demand for export, and the increased prosperity of the Natives generally, has also considerably increased of late years, and is expected to steadily continue to do so.

The Thrown Silk (sample 6) produced here, however, is as yet much below that of Huchow (湖絲) in quality, and is only fit to be used for the woof in Silk Piece Goods (絹緯絲), or for weaving Gauzes (縑絲) and Ribbons (欄杆). The total quantity of Raw Silk produced this year was about 60,000 taels weight, worth *Hk.Tls.* 7,500.

The following kinds of Silks are manufactured in Chinkiang, viz., the ling Pongee (綾絹) and kung Pongee (宮絹), both of which, though they are distinguished in name (from each other), belong to the same class of (Silk) Damasks.

The Raw Silk for the warp is boiled and softened (100 taels weight of Raw Silk will produce about 78 taels soft Silk), and the Silk for the woof is merely slightly beaten to soften it. The Raw Silk is dyed before being woven. Each piece is 54 feet to 55 feet long and 2 feet 2 inches wide, and varies from *Hk.Tls.* 0.1.7.0 to *Hk.Tls.* 0.2.2.0. per foot in value. The weight of the pieces is very irregular; the heavier kinds have 4,400 to 4,500 heads or warps, the lighter kinds only 3,900 to

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4,000. The Lingchow (綾 綢) (sample 7) is always heavier than the Kungchow (宮 綢) (sample 8), though both are woven in the same way. For the warps, the Thrown Silks produced in Chia-hsing-fu (嘉 興 府) (sample 9), in Chêhkiang (浙 江), and at Pochow (亳 州) (sample 24), in Anhwei (安 徽), are used; both of which are fine Silks. For the woofs, Raw Silk from Liyang (溧 陽) (sample 18), Wuhsi (無 錫) (sample 19), etc., is used, besides local Silk. Shining and smooth Silk is selected.

The annual production of these kinds is about 80,000 pieces, representing, at *Hk.Tls.* 9 per piece, a total value of *Hk.Tls.* 700,000. Of this quantity, about one-tenth is consumed locally; the remainder is sent to Peking, and Chihli (直 隸), Honan (河 南), Shansi (山 西), and Hupeh (湖 北). About 30,000 pieces are shipped by steamer *viâ* Shanghai; the remainder is sent overland.

In the manufacture of these Silks, figured and plain, there are some 1,000 looms (fig. XXVI) engaged, giving employment to about 4,000 labourers. For each loom three men are required, one to attend to the figuring part of the weaving, one for weaving, and one to look after the warps. In one day the three men together can turn out about 12 feet to 16 feet of Silk; for plain goods, two men only are required at each loom. Before the Taiping rebellion the quantity of looms was about the same; during that period the manufacturers had moved to the north bank of the river, and engaged in other pursuits, and they have since returned to Chinkiang.

In the manufacture of Gauze (縑 絲) (sample 10), local Raw Silk is used for both the warp and the woof, but neither are boiled or beaten to make them soft; the Gauzes are merely themselves softened, some sorts thoroughly, some half, etc. Each piece is about 55 feet or 56 feet long and 2 feet wide, containing between 2,500 and 2,720 heads or warps, and worth from *Hk.Tls.* 0.1.2.0 to *Hk.Tls.* 0.1.3.0 per foot. Thrown Silks from Liyang (溧 陽) (sample 18) and Yangchow (揚 州) (sample 11) are used for these goods also; for the warps, the finer threads from the coarse skeins are selected, and for the woof, coarse Silk alone is used.

The annual production is about 14,000 pieces to 15,000 pieces, each worth about *Hk.Tls.* 6.5.0.0, and representing a total value of *Hk.Tls.* 90,000. The whole is consumed locally and in the province.

There are about 200 looms (fig. XXVII), with 300 men, employed in the manufacture of these goods. Each loom requires only one man to attend to it. The same number of looms existed before the rebellion.

All kinds of Silk Ribbons (欄 杆) (sample 12) are manufactured in Chinkiang, and of different widths; the broader kinds have more, the narrower less, heads or warps. Yangchow (揚 州) (sample 11), Liyang (溧 陽) (sample 18), and locally-grown Silks are used. The Silk for the warp is first boiled and dyed, and that for the woof is first dyed and then beaten to make it soft.

The total annual production amounts to close upon 100,000 chang, worth about *Hk.Tls.* 1,500, and is all consumed locally, *i.e.*, in the province of Kiangsu (江 蘇).

There are 50 or 60 looms (fig. XXVIII) engaged in weaving Silk Ribbons, each attended to by one man; a second is required only in weaving the broader kinds, to attend to the figuring part of the weaving. On an average, one man can weave about 40 feet per day. There are

altogether about 100 men employed in the trade, which is also about the same in extent as before the rebellion.

There is also a kind of red plain Satin (紅素緞) (sample 13) manufactured here. The same kinds of Raw Silks as for making Lingchow and Kungchow are used in the manufacture of this Satin. The Silk for the warp is first boiled and dyed with safflower; that for the woof is not boiled, but slightly beaten and dyed with sapanwood. Each piece is 30 feet long and 2 feet 2 inches wide, containing 8,500 heads or warps. 300 pieces latterly was the annual production, each worth *Hk.Tls.* 12, or representing a total value of *Hk.Tls.* 3,600. All is consumed locally. Before the rebellion there were about 100 looms or more employed in the manufacture of this kind of Satin; there exist now only 30 or 40 such looms.

Silk floss (絨) and sewing thread (絲線) are made of Yangchow (揚州) (sample 11), Soochow-fu (蘇州府) (sample 23), Chinkiang (鎮江) (sample 6), Liyang (溧陽) (sample 18), and other similar Raw Silks.

For floss (sample 14), the Silk is coiled into skeins like the sample, then boiled with soda till soft: 100 taels weight Silk will give 75 taels floss. It is afterwards put into a solution of soap, to destroy the greasiness of the Silk, and then dyed. The annual production amounts to about 100,000 taels weight, worth *Hk.Tls.* 30,000.

For making sewing Silk (sample 15 (2)), Raw Silk of uniform thickness is chosen; two filaments are twisted together into threads. The threads are then coiled into skeins, and are either left raw (生線 or 未練), or are boiled like Silk floss to make them soft (練熟). The annual production is about 180,000 taels weight, valued at *Hk.Tls.* 40,000, for local consumption.

Tanyang (丹陽), situate in this prefecture, produced very little Silk before the rebellion; its cultivation commenced only during the reign of the late Emperor TUNGCHI (同治), 1862–1874, but it has steadily increased year by year. The quantity produced this year was 110,000 to 120,000 taels weight, valued at about *Hk.Tls.* 15,000. This Silk (sample 16) is reeled very coarse, and much used for the manufacture of Crape (洋縐).

In the manufacture of Crape (sample 17), the Huchow (湖州) system is followed. The Raw Silk, without being previously softened, is used for both the warp and the woof. The Crape is afterwards softened. Besides local (sample 6), Silk from Liyang (sample 18), Wuhsi (sample 19), Yangchow (sample 11), and neighbourhood is used. Each piece is 50 feet long and 1 foot 4 inches wide, containing about 2,000 warps to 2,200 warps, being worth from *Hk.Tls.* 0.1.6.0 to *Hk.Tls.* 0.1.7.0 per foot.

The annual production amounts to 14,000 pieces or 15,000 pieces, at *Hk.Tls.* 8 per piece, representing about *Hk.Tls.* 110,000 in value. It is chiefly consumed in this province.

There are now about 200 looms at work, with about 800 men employed, in the manufacture of Crape, which is made in about the same way as Kungchow (宮綢) in Chinkiang.

Liyang (溧陽), after having previously neglected the industry entirely, commenced the cultivation of Silk during the reign of CHIENLUNG (乾隆), 1736–1796. During the reign of TAOKWANG (道光), 1821–1851, the quantity of Silk produced there amounted to more than 2,600,000 taels weight annually, worth at that time from *Hk.Tls.* 8 to *Hk.Tls.* 9 per 100 taels weight, and representing a total value of *Hk.Tls.* 270,000. During the Taiping rebellion the people fled in all directions, and very little Silk was then produced. Since peace has been restored, the

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cultivation has gradually increased, and during the present year as much as 5,000,000 taels weight of Silk were produced, realising about *Hk.Tls.* 750,000 in value. About eight-tenths of the production was sent to Shanghai for exportation to Foreign countries, and it is that Silk (sample 18) which is commonly called Tats'an or Taysaam (大蠶). It is only fit for the warp.

Wuhsi (無錫), in the prefecture of Ch'angchow(常州), likewise yielded but little Silk till, in the 10th year of HSIENFUNG (咸豐), 1860, more attention was paid there to its cultivation; and the total production during the present year amounted to 3,200,000 taels weight, and *Hk.Tls.* 480,000 in value. The Silk (sample 19) is superior in quality to the Liyang Silk, and also higher in price. About four-tenths only of the total production was sent to Shanghai for exportation abroad, the rest being consumed in the manufacture of Silk Piece Goods. Wuhsi Silk is almost exclusively used for the woof.

In Ch'angchow-fu (常州府) and Ihsing (宜興), where also next to no Silk was formerly produced, during the present year the total production of Raw Silk is estimated at 600,000 taels weight, valued at *Hk.Tls.* 90,000. These Silks (samples 20 and 21) are generally reeled very coarse, and used for the woof, and are made into Gauzes (縑絲), sewing thread (絲線), or floss (絨). At Iching (儀徵) and its neighbourhood, in the prefecture of Yangchow, the annual production amounts to about 70,000 to 80,000 taels weight, valued at *Hk.Tls.* 7,500. These Silks (sample 22) are not fit for the woof, and are made into thread or floss. The skeins, as a rule, are very irregular, and, failing proper classification, are termed unclassed (雜絲).

Hsüchow-fu (徐州府) produces Silk to the amount of 600,000 taels weight, worth about *Hk.Tls.* 75,000, annually. The Silk (sample 23) is reeled very coarsely, and fit only for sewing thread. Raw Silk reaches Chinkiang also from Ch'ênchow-fu (陳州府), in Honan. This Silk, though produced in the Chênchow prefecture, is generally called Pochow (亳州) Silk, which place is very near Chênchow, and forms the chief distributing mart for this kind of Silk. The total annual production is estimated to amount to over 2,700,000 taels weight, and is valued at *Hk.Tls.* 450,000. It is the product of worms fed on mulberry, and is a fine Silk (sample 24), yellow in colour. In Chinkiang it is used for the warp, mixed with Chiahsing (嘉興) Silk. The quantity brought to Chinkiang varies between 300,000 and 400,000 taels weight.

K'aifêng-fu (開封府), in Honan, also rears worms on mulberry leaves, and the Silk annually produced there is estimated at 330,000 taels weight. It is all used locally in the manufacture of a kind of texture called Pienliang-chow (汴梁綢), which is thence sent for consumption in Peking and its province. No part of this Silk reaches Chinkiang either in the raw or manufactured state, and consequently no samples could be procured.

The annual production of Raw Silk in the neighbourhood of Nanking has been steadily increasing from year to year; and during the present, was estimated to amount to 3,000,000 taels weight, valued at *Hk.Tls.* 400,000. As before described, it is the product of worms fed with wild and domestic mulberry, in proportions of two parts of the former to eight parts of the latter. None of the Raw Silk (sample 25) is exported, but all is used up locally for the weft in Pongees and Satins. It is unfit for the warp in weaving Satins, for which the fine Silk (sample 26) from 'Haining-chow (海甯州), in Chêhkiang, is used.

The number of official looms, according to statute, in the Chiangnan (江南) province is 545. The workmen in them are paid by the Government. When found insufficient to

meet the imperial requirements in Silks, more looms are hired from the people. The kinds of Silks manufactured are very numerous. Such kinds as Satin, plain (貢 緞), Mopên Satin (摹 本 貢 緞), Chuang'hua Satin (粧 花 貢 緞), Veda's gold (韋 陀 金), Velvet (絨, more properly called 剪 絨), T'ieno-tsou (天 鵝 縐), and kung Pongee (宮 綢), all of which are manufactured with these official looms, are also allowed to be worn by the people. The wearing of all other kinds of Pongees, Damasks, etc., which are made specially for the Emperor, according to musters sent down from Peking to the Silk Commissioner, is forbidden, and no samples could therefore be procured.

Before the Taiping rebellion, in 1853, there were 35,000 looms in the city of Nanking, and 15,000 looms in the villages in its neighbourhood, engaged in the manufacture of Satins. There are at the present time only 4,000 looms (fig. XXIX) within the city, and 1,000 looms in the surrounding villages, employing in all about 17,000 men. Each piece of Satin is 4 chang long; but there is a considerable variation in their width, which from 2 feet 2 inches rises inch by inch to 3 feet 2 inches. They vary also in the number of warps; in the lightest pieces the number of threads is 10,000, rising gradually in the heavier sorts by 1,000 or 500 threads up to 17,300. The pieces vary in weight from 45 taels to 83 taels, as also in quality and colour. There is a further distinction between flour (粉 絲) (sample 27) and pure-water (清 水 絲) (sample 28) Satins; the inferior kinds being mostly half flour, and the best solely pure water.

The annual production of Satin amounts to about 200,000 pieces, valued at *Hk.Tls.* 2,600,000. About 30,000 pieces are exported from Wuhu, destined for Shanghai, Canton, and Peking; about 20,000 are sent overland by road direct from Nanking to Peking; 20,000 are returned as having paid inland taxes at Soochow (蘇 州) *en route* to Shanghai, to which place also it is estimated that 10,000 are carried in Native vessels. Hunan (湖 南), Hupeh (湖 北), Chingchow (荊 州), Szechwan (四 川), Hankow (漢 口), and Kweichow (貴 州), in Yünnan (雲 南), are debited with 80,000 pieces, and 40,000 is the estimated consumption in this province, Honan, and Shantung.

Against 2,500 looms that existed in 1853, before the rebellion, 300 looms (fig. XXX) only are at present at work, employing 1,300 men, in the manufacture of Mopên. They are made in all colours, and two qualities, first and second respectively (samples 29 and 30). Each piece is 4 chang long and 2 feet 5 inches or 2 feet 7 inches in width. The pieces vary in weight as well as in quality.

The annual production is estimated at 10,000 pieces, valued at *Hk.Tls.* 230,000.

In the manufacture of Chuang'hua gold figured Satin (sample 31), about 300 looms (fig. XXXI) only, with 1,500 men employed, exist, against 1,000 looms at work before the rebellion. The pieces vary according to order, up to 6 chang in length, and from 2 feet 2 inches to 3 feet in width.

The yearly production amounts to about 3,000 pieces, valued at *Hk.Tls.* 150,000.

These Silks are almost exclusively made to order, for consumption by the bannermen in Peking and the north; some two-tenths at most are retained for local consumption.

Veda's gold (sample 32), a kind of Damask interwoven with gold thread, is woven on the same looms as the "Chuang'hua." Each piece is generally 2 feet 2 inches wide, varying in

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length according to order. Its price ranges from *Hk.Tls.* 2 to *Hk.Tls.* 3 per foot. It is made almost exclusively for the use of the Emperor, and very little is consumed by the people.

No less than 7,000 looms are reckoned to have been engaged before the rebellion in the manufacture of Velvets (sample 33); not many more than 200 looms (fig. XXXII), employing about 800 men, are returned as at work now. One man can weave 3 feet only per day. Each piece is 2 chang long and 1 foot 6 inches, 1 foot 7 inches, or 1 foot 8 inches wide, varying in price from *Hk.Tls.* 0.2.0.0 to *Hk.Tls.* 1.2.0.0 per foot.

The annual production is about 800 pieces, valued at *Hk.Tls.* 8,000.

T'ieno-tsou (天鵝縐), which is also called Tiao'hua-jung (雕花絨), figured Velvet (sample 34), is also made in Nanking, costing about *Hk.Tls.* 1.6.0.0 per foot.

In the manufacture of Pongees (sample 35), 4,000 looms were at work before the Taiping rebellion; there exist now about 700. Each piece is 5 chang long and 2 feet 2 inches wide.

The annual production amounts to 20,000 pieces, valued at *Hk.Tls.* 200,000. Half of it is sent for consumption to Chihli, Honan, and Hankow; the rest is consumed in the other provinces.

During the last year of the reign of TAOKWANG (道光), 1850, only a few score of looms were engaged in the manufacture of Silk ribbons (sample 36); there are now about 3,000 at work, employing 4,000 men. Their width is between 2 inches and 3 inches, and they are worked in about 300 different patterns. There are two kinds of musters, woven and brocaded.

The annual production is valued at *Hk.Tls.* 130,000 for 3,800,000 chang.

Over 75,000, it is estimated, is the total number of establishments for making Thrown Silk, and over 10,000 the total number of Silk-weaving looms employed, in the places mentioned in this Report and their neighbourhood; and their probable total annual production is put down as 17,500,000 taels weight of Thrown Silk, and 350,000 pieces of all kinds of Silk Piece Goods, representing a total value of close upon *Hk.Tls.* 10,000,000.

With the exception of the number of official looms as laid down by statute, no reliable returns have been procurable of the quantity or value of Silk Piece Goods, etc., manufactured for the Imperial Court.

F. KLEINWÄCHTER,

Commissioner of Customs.

NOTE.

The Haikwan Tael, in which the values are stated, is equivalent—
in English money to 5*s.* 7$\frac{1}{3}$*d.*;
„ American money (gold) to $1.35;
„ French money to frs. 7.10;
at the average sight exchange on London, New York, and Paris for 1879.
1,600 cash = 1 Haikwan Tael.

The Chinese weights and measures given in the Report are, according to WILLIAMS, equivalent—

1 tael	= 1$\frac{1}{3}$ ounces avoirdupois.		
16 taels	= 1 catty	=	2$\frac{2}{3}$ lbs. avoirdupois.
100 catties	= 1 picul	=	133$\frac{1}{3}$ lbs. avoirdupois.
10 inches	= 1 foot	=	14.1 inches (English).
10 feet	= 1 chang	=	11 feet 9 inches „

SUB-ENCLOSURE — INDEX OF

No.	DESCRIPTION.		PRODUCED AT
	ENGLISH.	CHINESE.	
1	Domestic silkworm eggs	蠶子	Chinkiang
2	Refuse Silk	絲綿	Chêhkiang
3	Silk strings	絲絃	Northern provinces
4	Pongee	綿紬	Chêhkiang
5	„	繭紬	Shantung
6	Thrown Silk	鎮江絲經	Chinkiang
7	Ling Pongee	鎮江綾紬	„
8	Kung „	鎮江宮紬	„
9	Thrown Silk	嘉興絲經	Chiahsing-fu
10	Gauze	生緎絲經	Chinkiang
11	Thrown Silk	揚州絲經	Yangchow
12	Ribbons (seven sorts)	鎮江欄杆	Chinkiang
13	Red plain Satin	鎮江大紅緞	„
14	Floss Silk	絨線	„
15	Sewing Silk (two sorts)	生熟絲線	„
16	Thrown Silk	丹陽絲經	Tanyang
17	Crape	丹陽洋縐	„
18	Thrown Silk	溧陽絲經	Liyang
19	„	無錫絲經	Wuhsi
20	„	常州絲經	Ch'angchow-fu
21	„	宜興絲經	Ihsing
22	„	儀徵絲經	Iching
23	„	徐州絲經	Hsüchow-fu
24	„ (Pochow)	亳州絲經	Chênchow-fu
25	„	南京鄉絲經	Nanking
26	„	海甯細絲經	Haining-chow
27	Tribute Satin (flour)	貢緞粉絲	Nanking
28	„ „ (pure water)	貢緞清水絲	„
29	Mopên (tribute Satin)	摹本貢緞	„
30	„ „ (second quality)	摹本貢緞	„
31	Chuang'hua (tribute Satin)	粧花貢緞	„
32	"Veda's" gold (gold figured)	韋陀金	„
33	Velvet	剪絨	„
34	„ (figured)	天鵝縐刁花絨	„
35	Nanking kung Pongee	南京素宮紬	„
36	Ribbons (12 sorts)	南京欄杆	„

o. 1.

MPLES.

Used for	Raw Material.	Price.	Report Page.
Hatching worms	... ...	*Hk.Tls.* 1.0.0.0 per tael	50, 54
Wadding, etc.	Damaged cocoons	„ 1.50 „ catty	53, 58
Musical (stringed) instruments	Cocoons of wild silkworms	„ 0.22 „ tael	54
Underclothing	Refuse Silk	„ 0.10 „ foot	58
Clothing, etc.	Wild Raw Silk	„ 0.08 „ „	58
The woof	Cocoons of domestic silkworms	„ 13.50 „ 100 taels	59, 61
Clothing, etc.	Various Silks	„ 0.17 to *Hk.Tls.* 0.22 per foot	60
„	„	„ 0.17 „ 0.22 „	60
The warp	Cocoons of domestic silkworms	„ 16 per 100 taels	57, 60
Clothing, etc.	Various Silks	„ 0.13 „ foot	57, 60
The warp and woof	Cocoons of domestic silkworms	„ 13 „ 100 taels	49, 60, 61
... ...	Various	„ 0.0.0.6 to *Hk.Tls.* 0.56 per foot	60
Clothing, etc.	Various Silks	„ 12 per piece of 30′ by 2′ 2″	61
Embroidery, etc.	„	„ 0.35 per tael	61
„	„	„ 0.15 to *Hk.Tls.* 0.25 per tael	61
Crape, etc.	Cocoons of domestic silkworms	„ 13 per 100 taels	61
Clothing, etc.	Various Silks	„ 0.17 „ foot	61
The woof	Cocoons of domestic silkworms	„ 13 „ 100 taels	57,60,61,62
„	„ „ „	„ 14 „ „	60, 61, 62
„ (Gauzes, etc.)	„ „ „	„ 12.50 „ „	62
„	„ „ „	„ 13 „ „	57, 62
Floss and thread	„ „ „	„ 13.50 „ „	62
„ „	„ „ „	„ 12.50 „ „	49, 61, 62
The warp	„ „ „	„ 13.50 „ „	60, 62
Various	„ „ „	„ 16 „ „	49, 62
Warp (Satins)	„ „ „	„ 20 „ „	49, 57, 62
Clothing, etc.	Various	„ 0.20 „ foot	63
„	„	„ 0.27 „ „	63
„	„	„ 0.36 „ „	63
„	„	„ 0.35 „ „	63
„	„	„ 1 „ „	63
Emperor	„	„ 2.40 „ „	63
Clothing, etc.	„	„ 0.20 to *Hk.Tls.* 1.20 per foot	64
„	„	„ 1.60 per foot	64
„	„	„ 0.20 „	64
... ...	„	„ 0.0.1.0 to *Hk.Tls.* 0.12 per foot	64

Sub-Enclosure No. 2.

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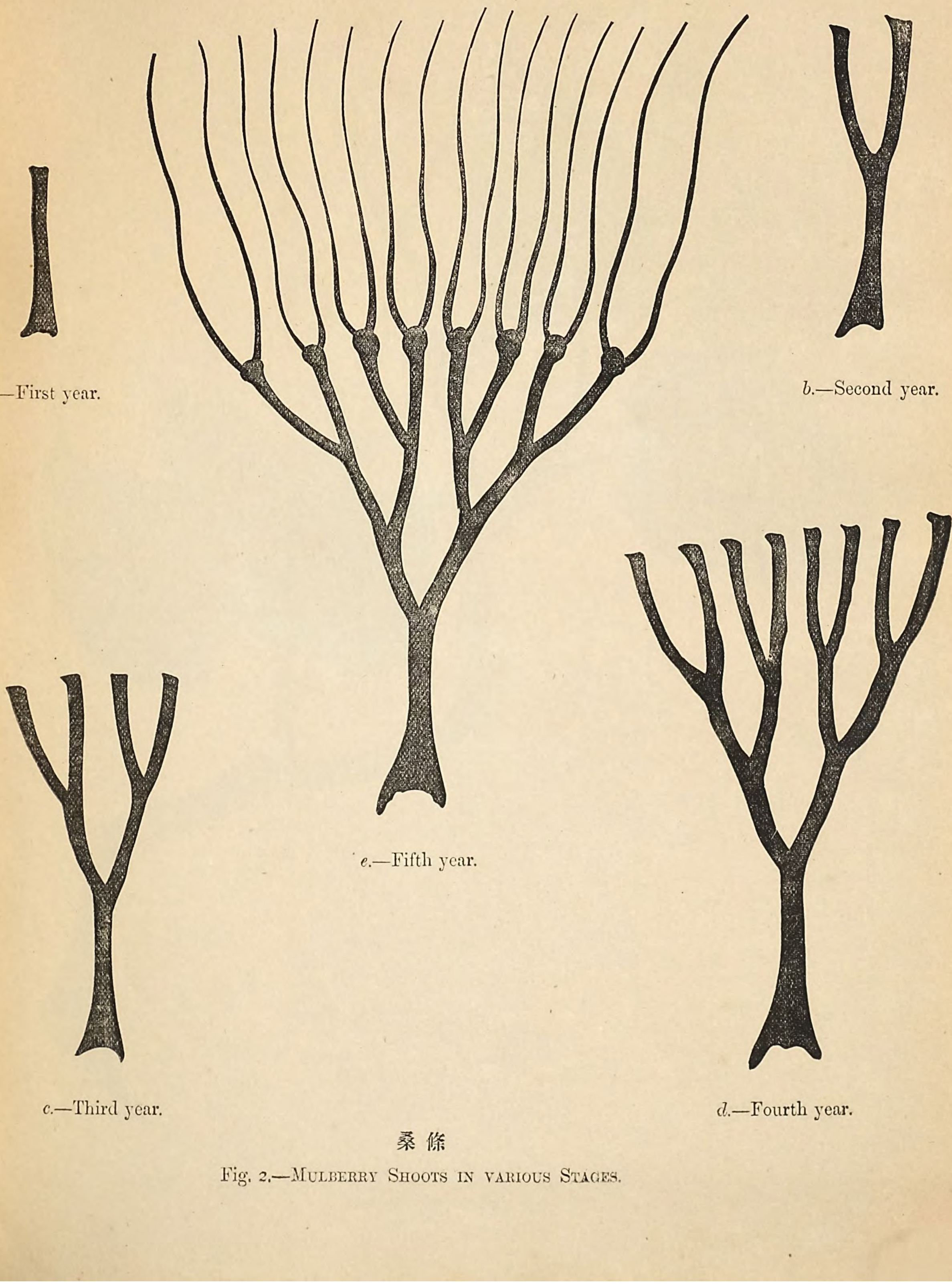
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桑 簪 湖

Fig. 1.—Domestic Mulberry Leaves.



a.—First year.

b.—Second year.

c.—Third year.

d.—Fourth year.

e.—Fifth year.

桑條

Fig. 2.—Mulberry Shoots in various Stages.



牛桑

Fig. III.—Mulberry Ox.



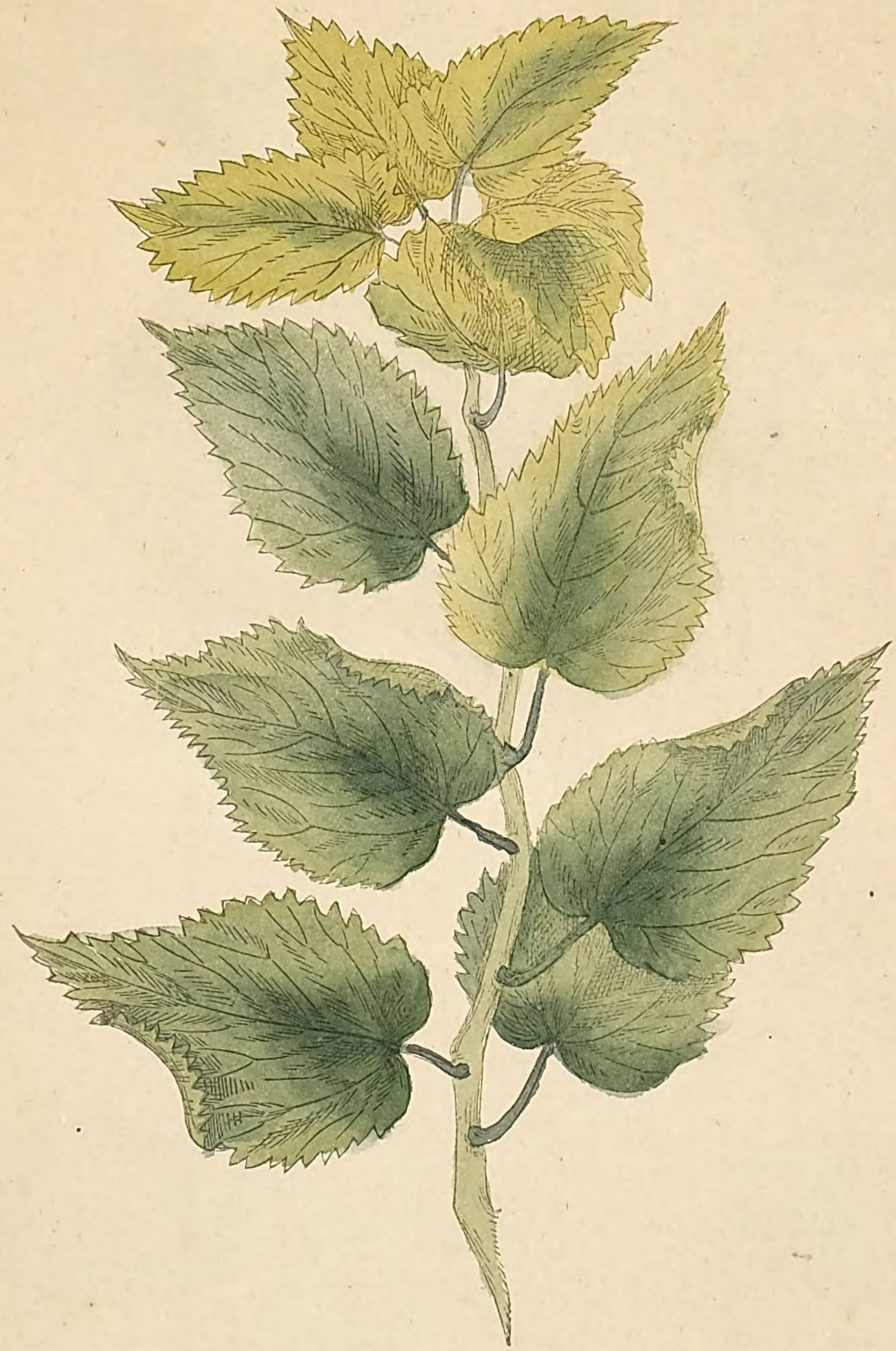
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Fig. IV.—Mulberry Insect.



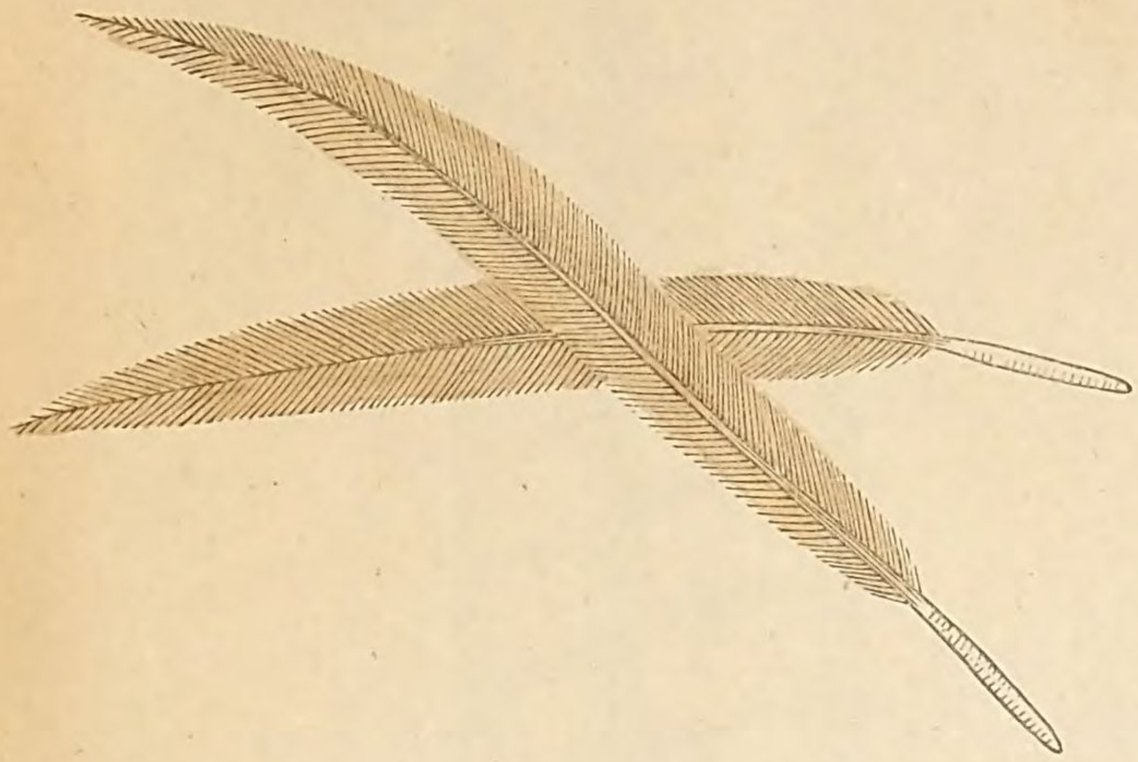
大眠後已餧葉四五日之蠶

Fig. v.—Domestic Mulberry Leaves, with Worms Four or Five Days after their Fourth Stupor.



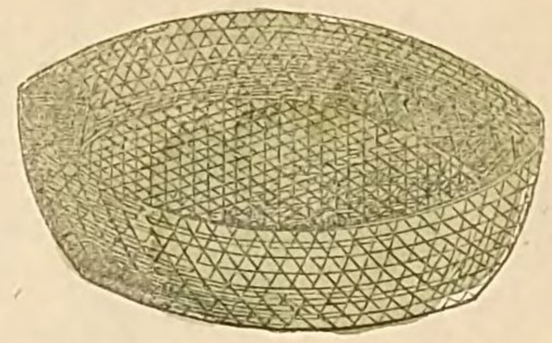
桑野

Fig. VI.—Wild Mulberry.



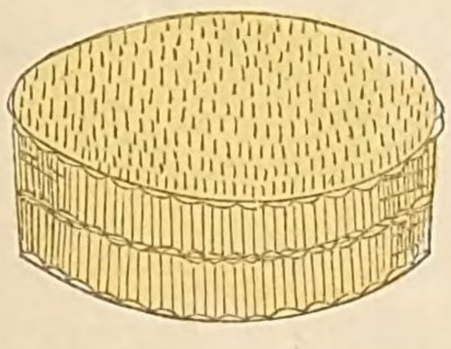
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Fig. VII.—Brushes (Feathers).



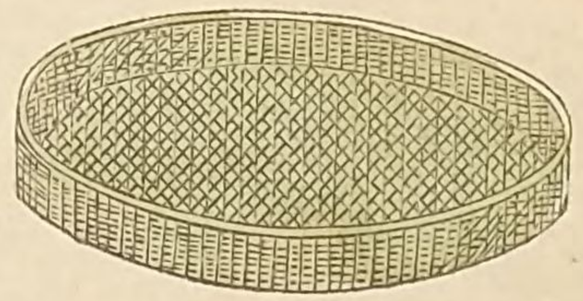
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Fig. VIII.—Tray (or Basket) for Worms, various sizes.



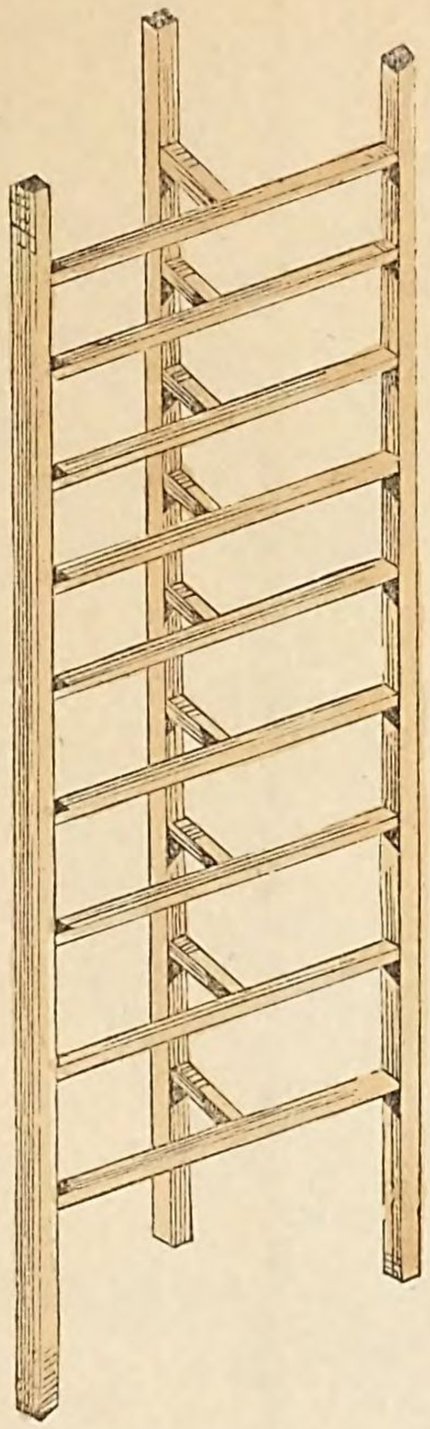
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Fig. IX.—Straw Chopping Pad.



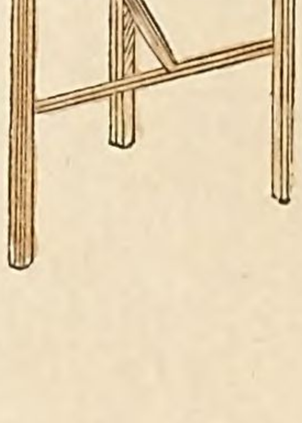
篩葉

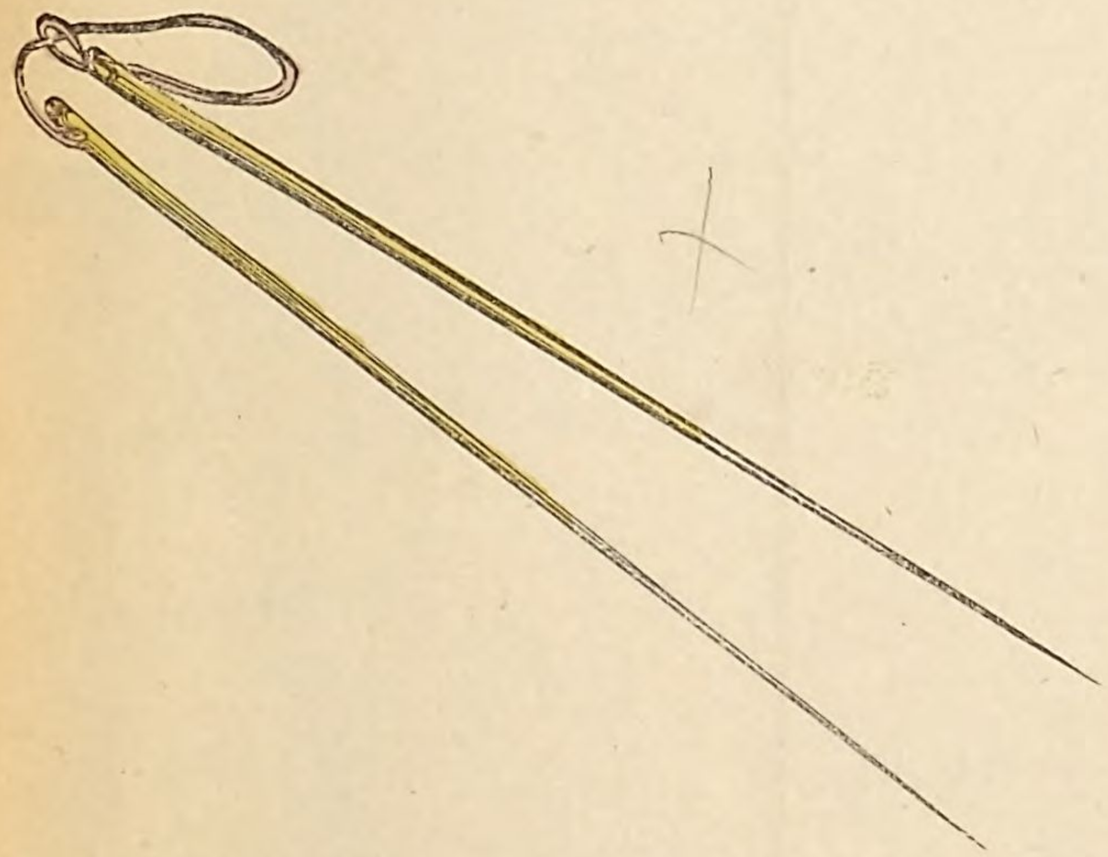
Fig. X.—Sieve.



架蠶大

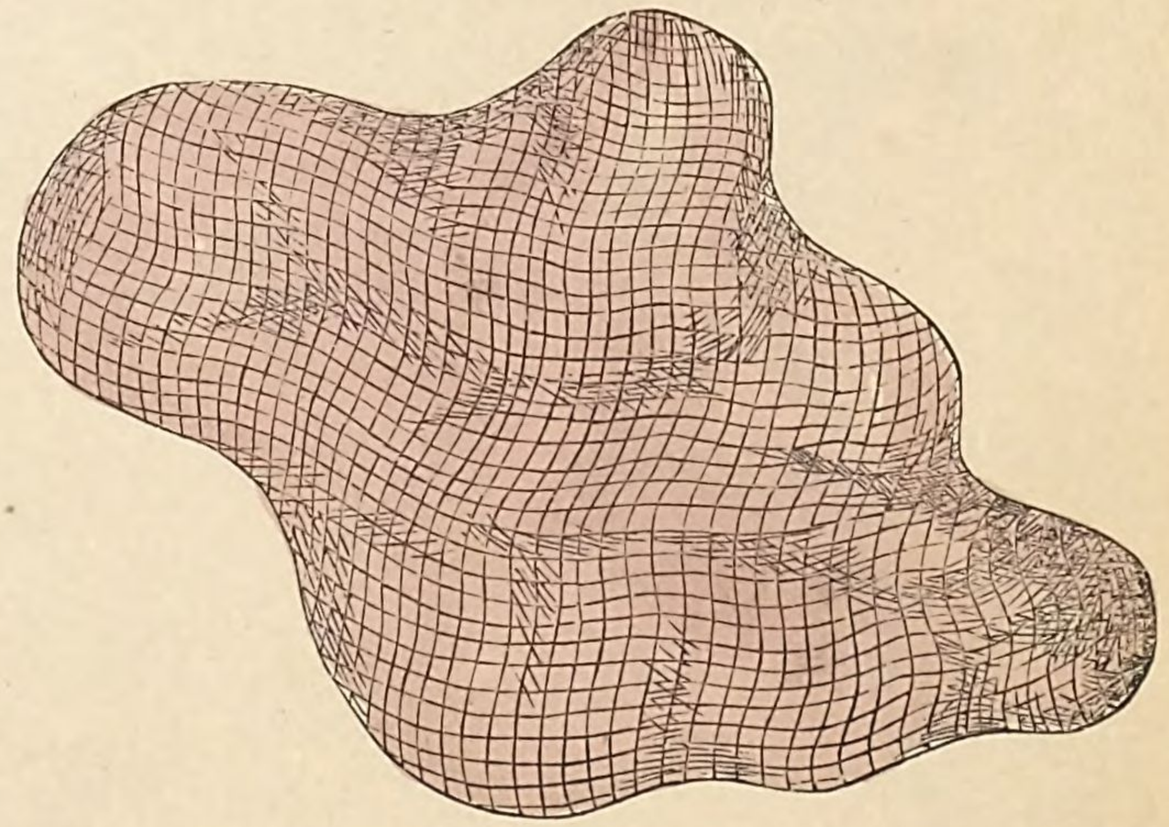
Fig. XI.—STANDS FOR TRAYS.





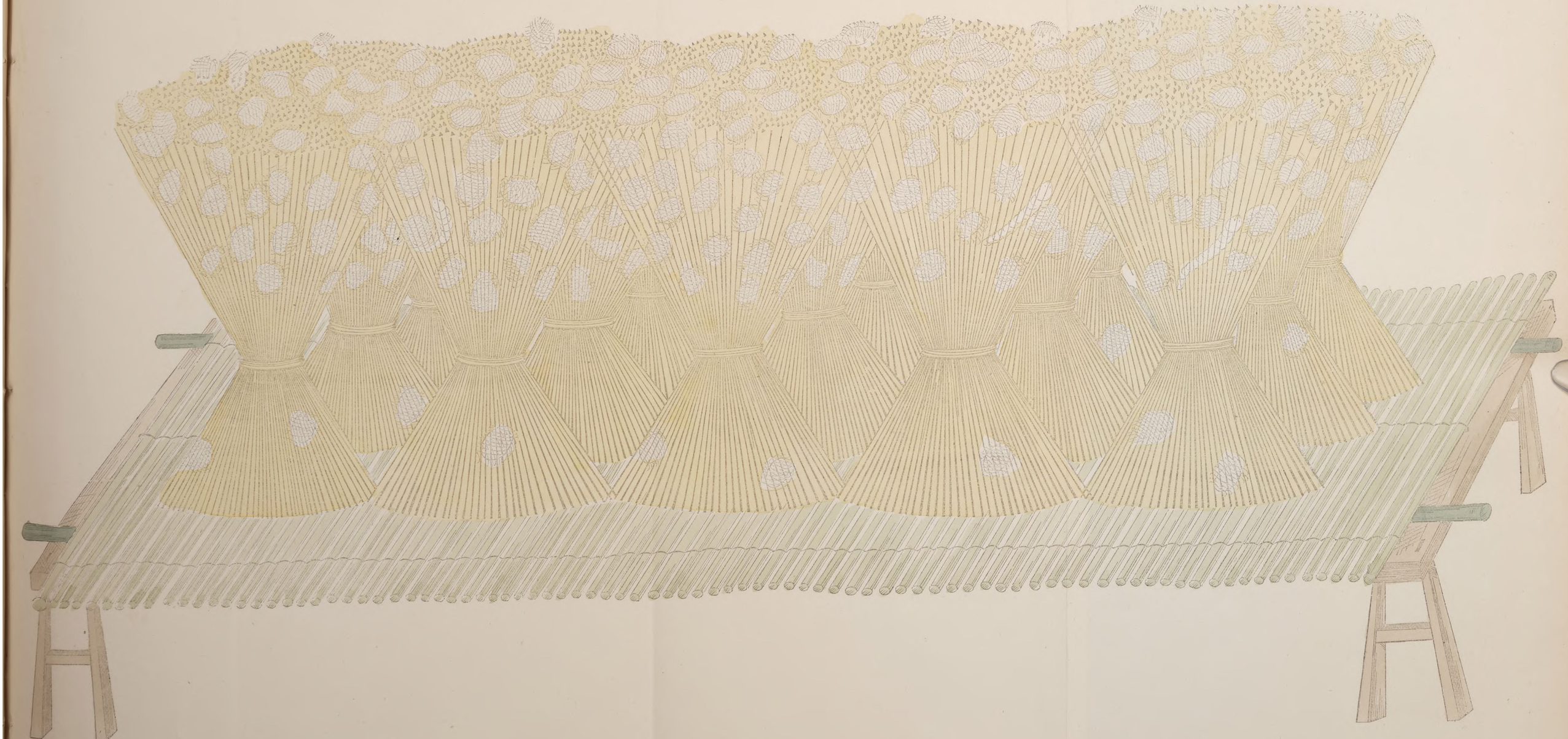
箸蠶

Fig. XII.—BAMBOO STICKS FOR PICKING UP WORMS.



網蠶

Fig. XIII.—HEMPEN NET TO SPREAD OVER TRAYS.



蠶山

Fig. XIV.—SILKWORM "HILLS."



蛾蠶

Fig. XV.—Domestic Silkworm Moths.



葉樹柘

Fig. XVI.—SHIH TREE LEAVES.

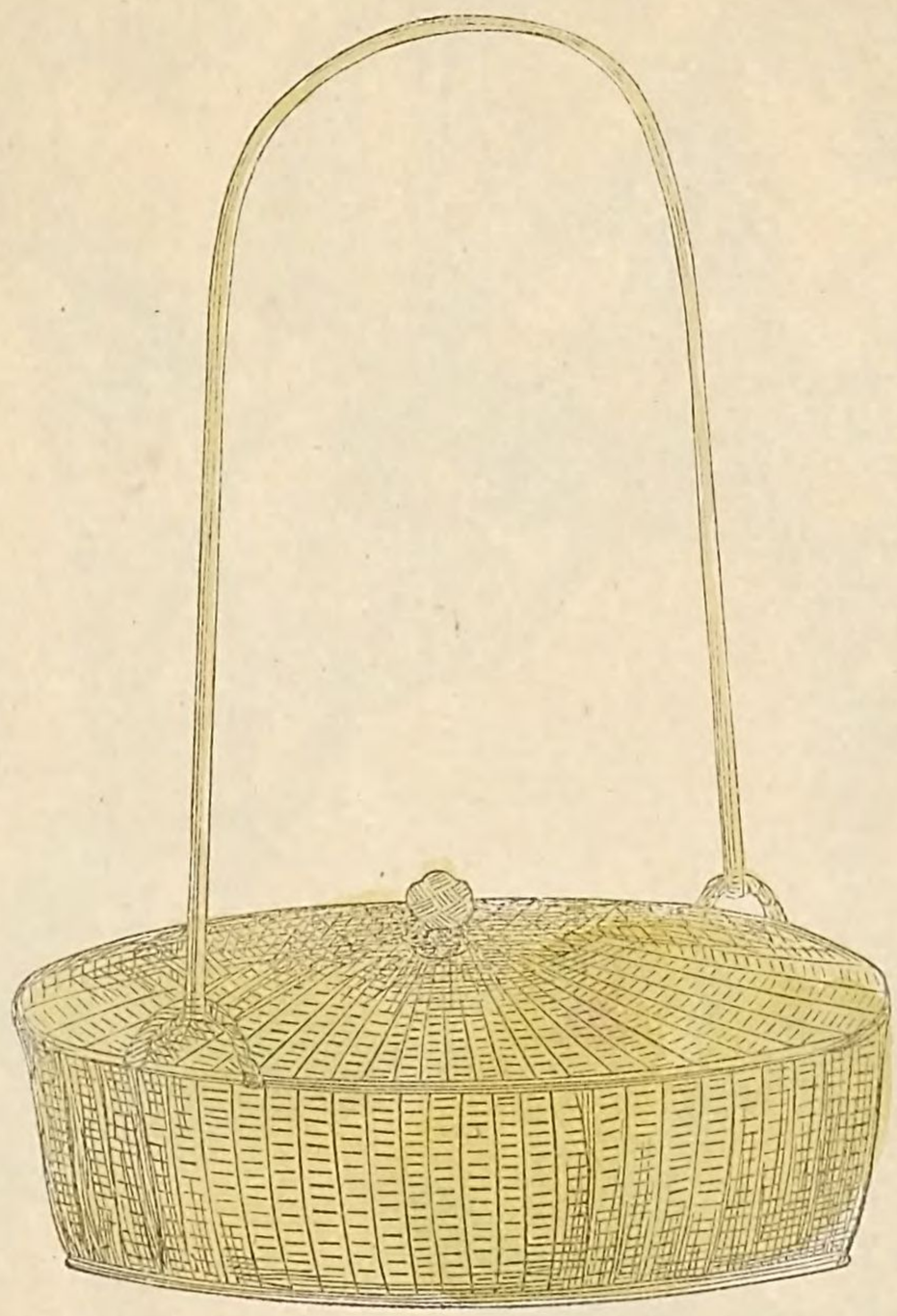


葉樹橡

Fig. XVII.—HSIANG TREE LEAVES.

葉樹櫟

Fig. XVIII.—Li Tree Leaves.



野蠶筐

Fig. XIX.—Basket for Wild Silkworms.



上樹椽繭蠶野

Fig. xx.—Wild Silkworms' Cocoons on Hsiang Tree.



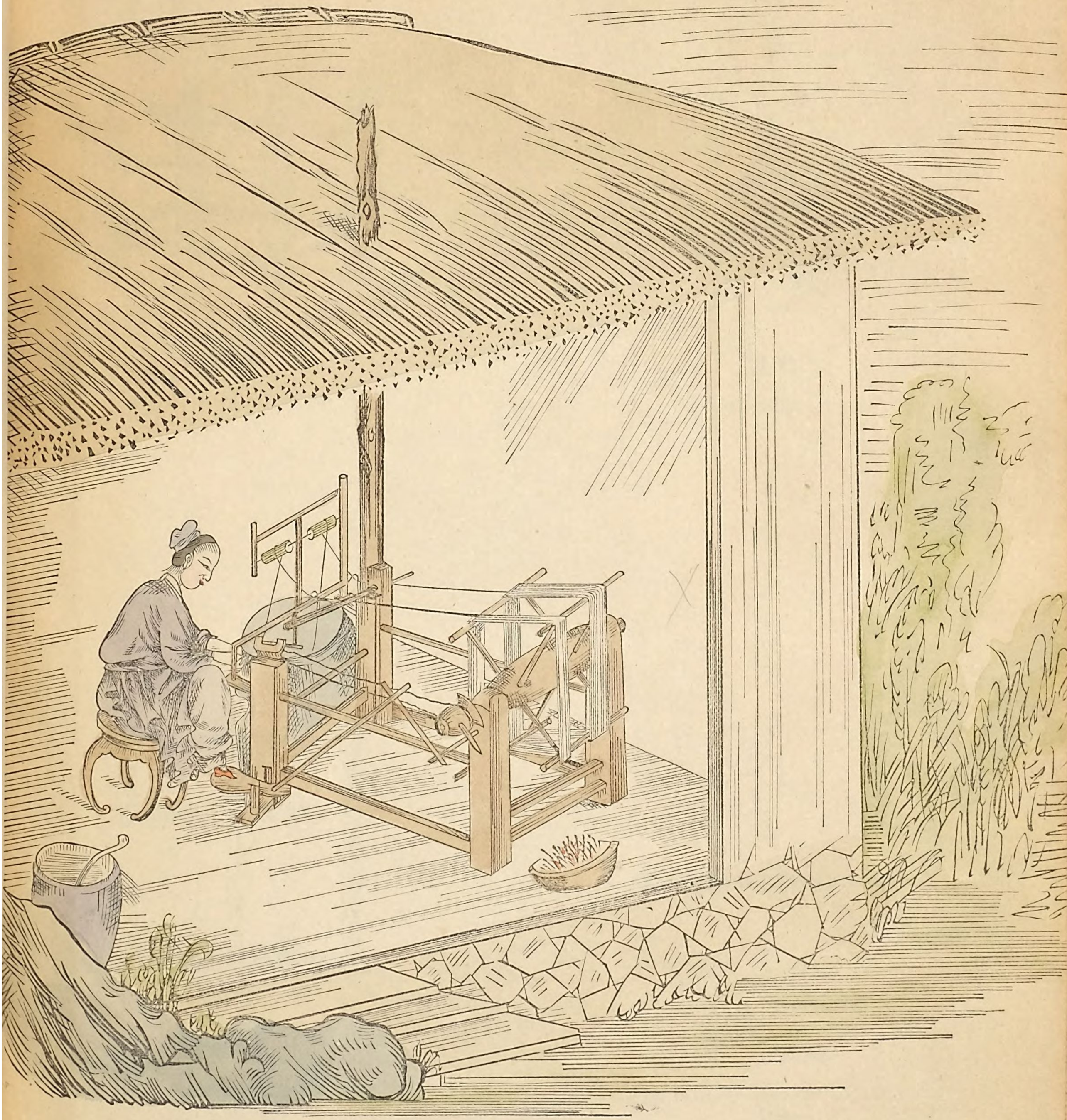
蛾蠶野

Fig. XXI.—WILD SILKWORM MOTHS (FEMALE) ON SHIH TREE.



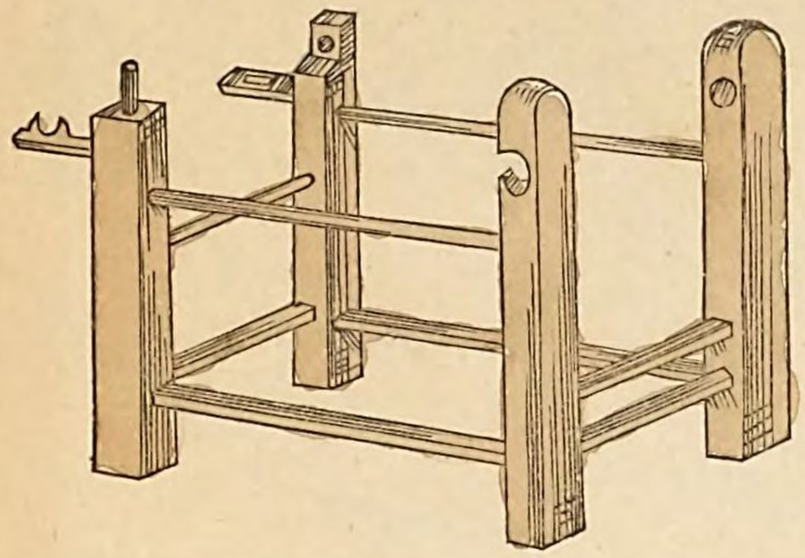
野蠶喫柘樹葉

Fig. XXII.—Wild Silkworms on Shih Tree.



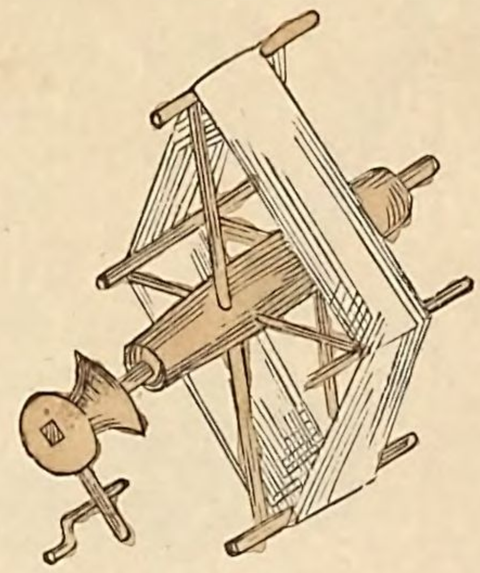
繅絲器

Fig. XXIII.—Reeling Machine.



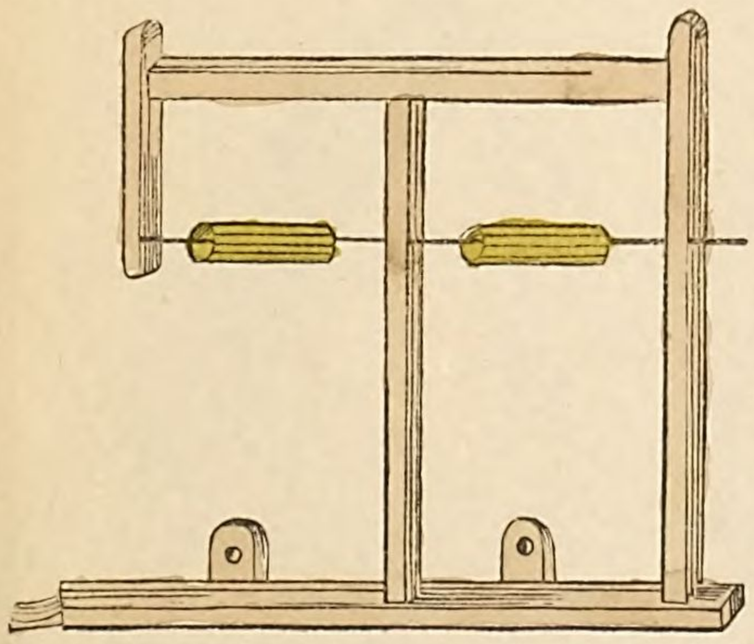
式狀車

Fig. XXIII *a*.—MAIN BODY.



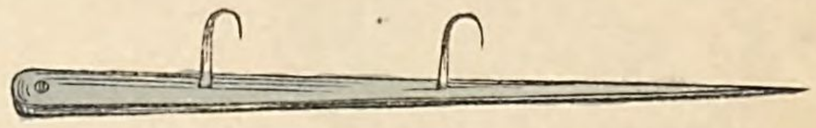
式軸車

Fig. XXIII *b*.—REEL.



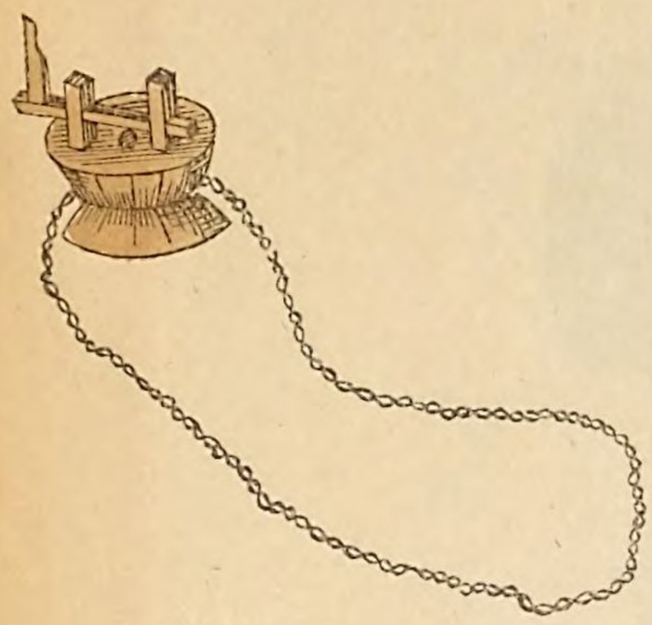
式坊牌

Fig. XXIII *c*.—FRAME WITH ROLLERS AND EYELETS.



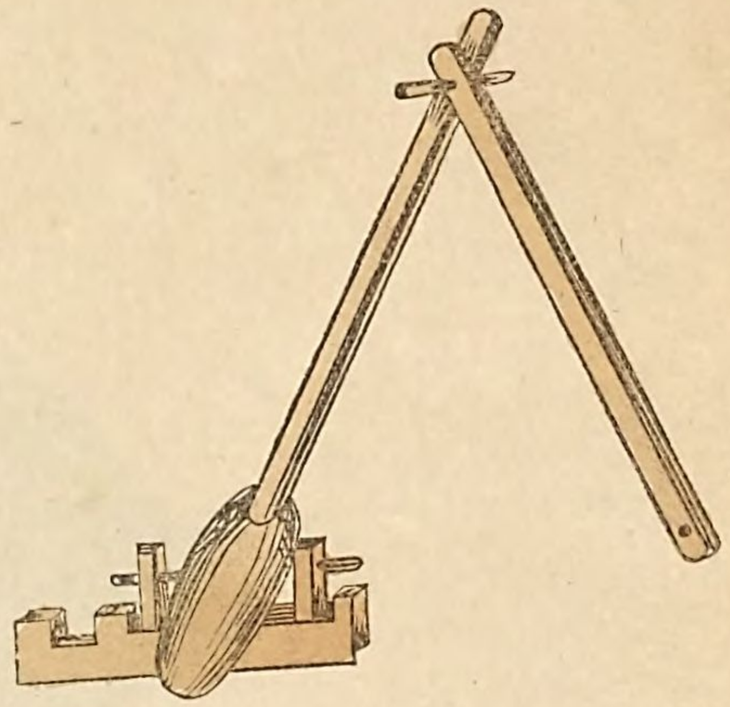
式稱絲

Fig. XXIII *d*.—PRESSING BOARD WITH HOOKS.



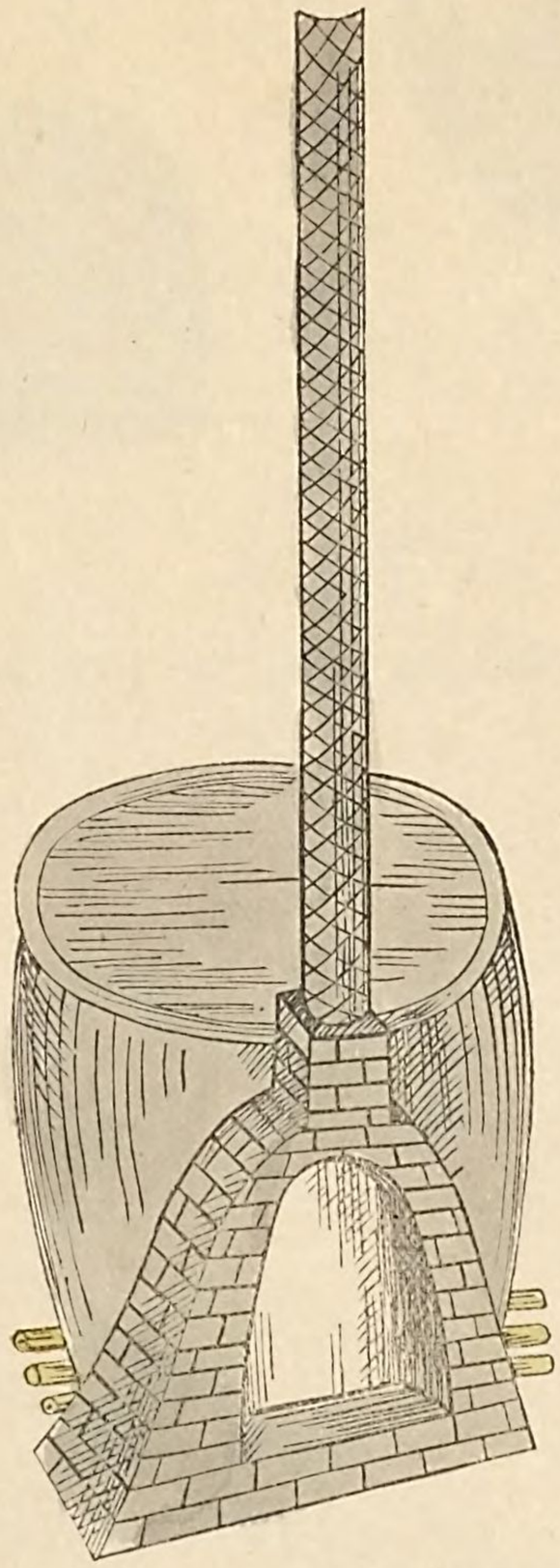
式橙孃牡

Fig. XXIII *e*.—DRIVING PULLEY.



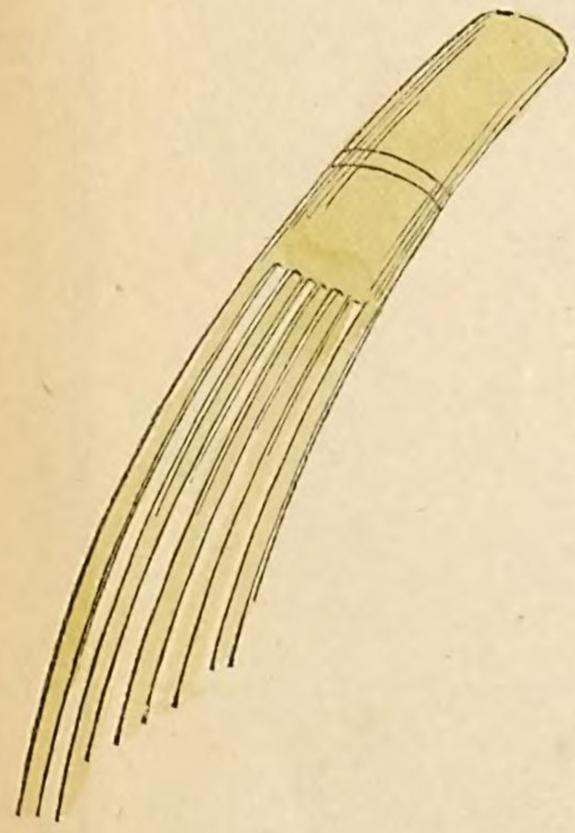
式板脚踏

Fig. XXIII *g*.—TREADLE.



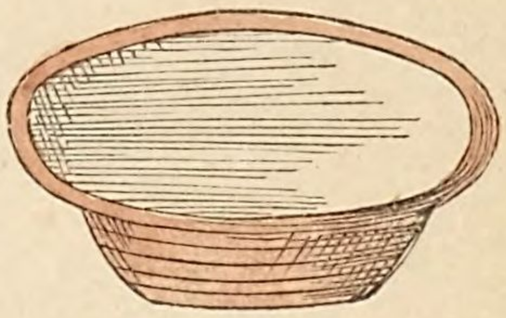
式筒烟灶絲

Fig. XXIII *i*.—FURNACE FITTED WITH PAN FOR COCOONS.



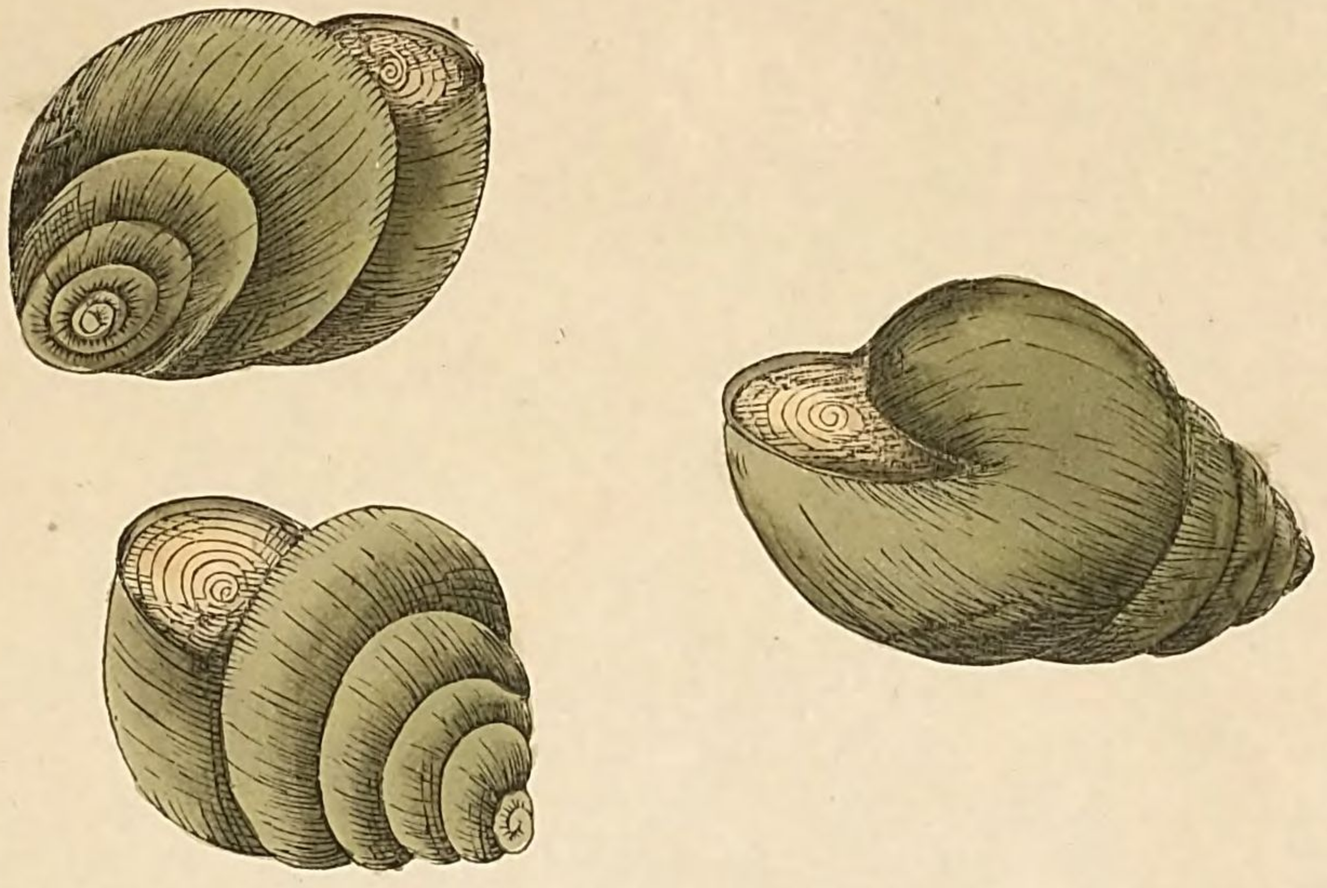
式手絲倣

Fig. XXIII *f*.—COMB.



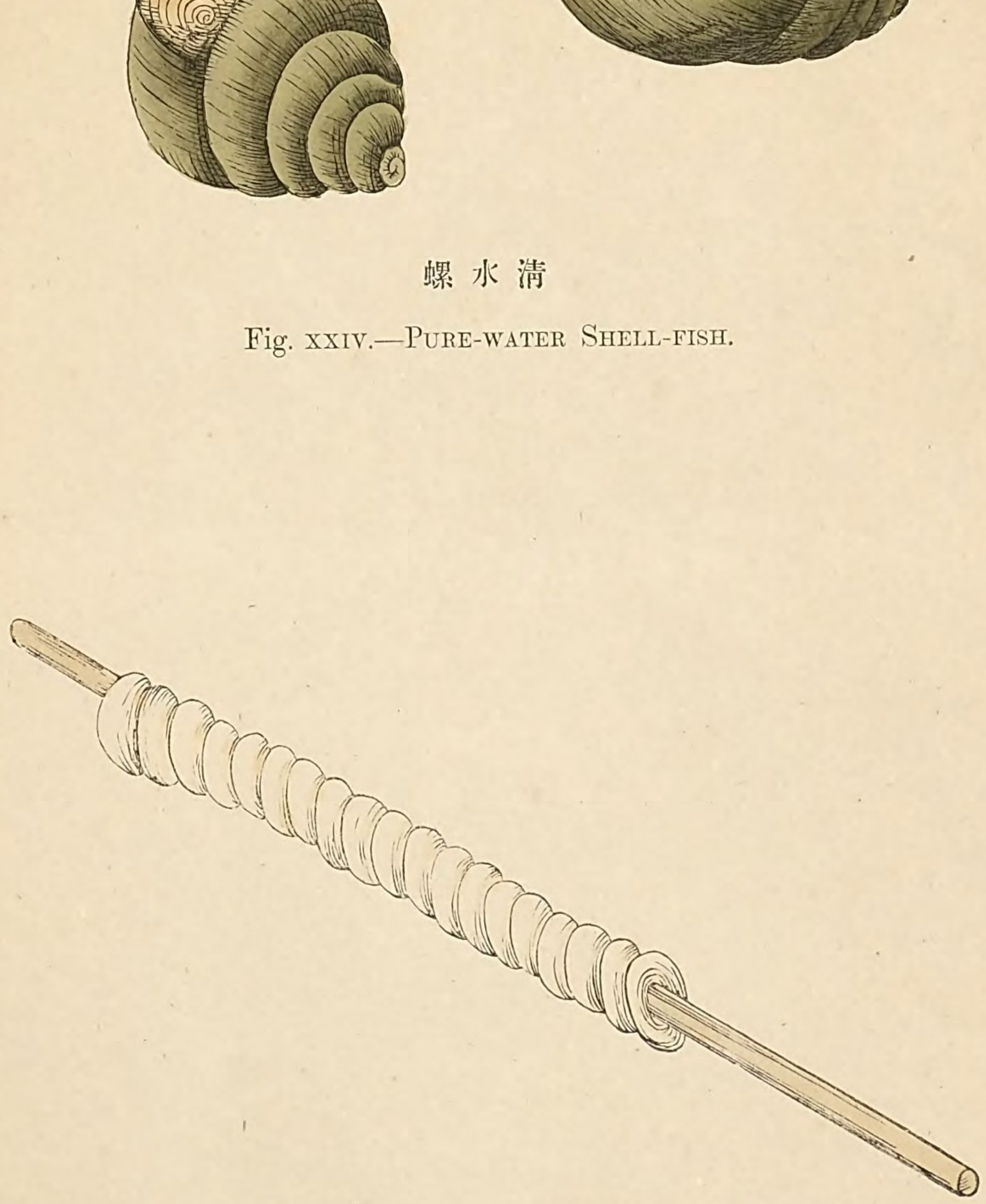
式盆火

Fig. XXIII *h*.—CHARCOAL STOVE.



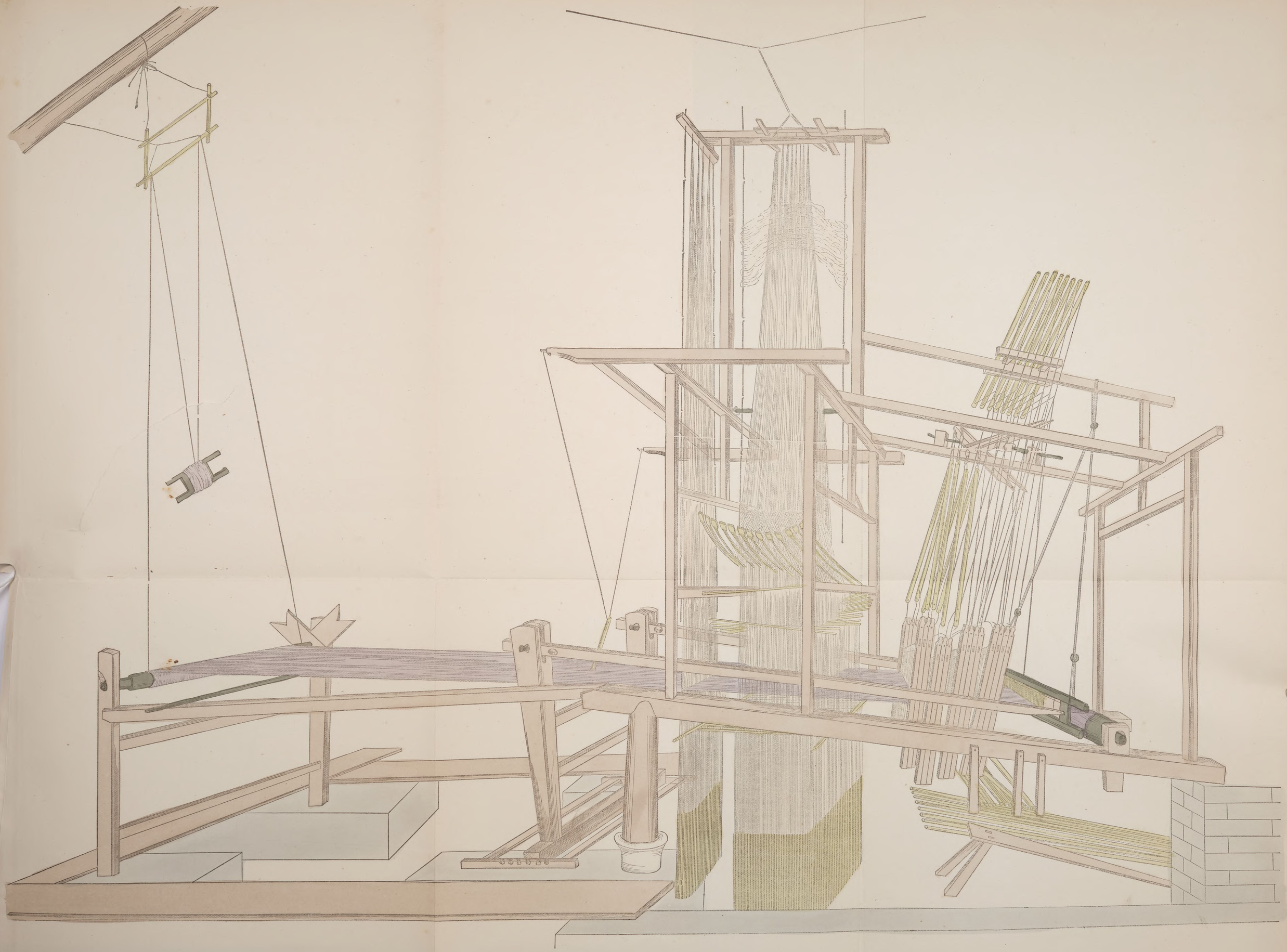
螺水清

Fig. XXIV.—PURE-WATER SHELL-FISH.



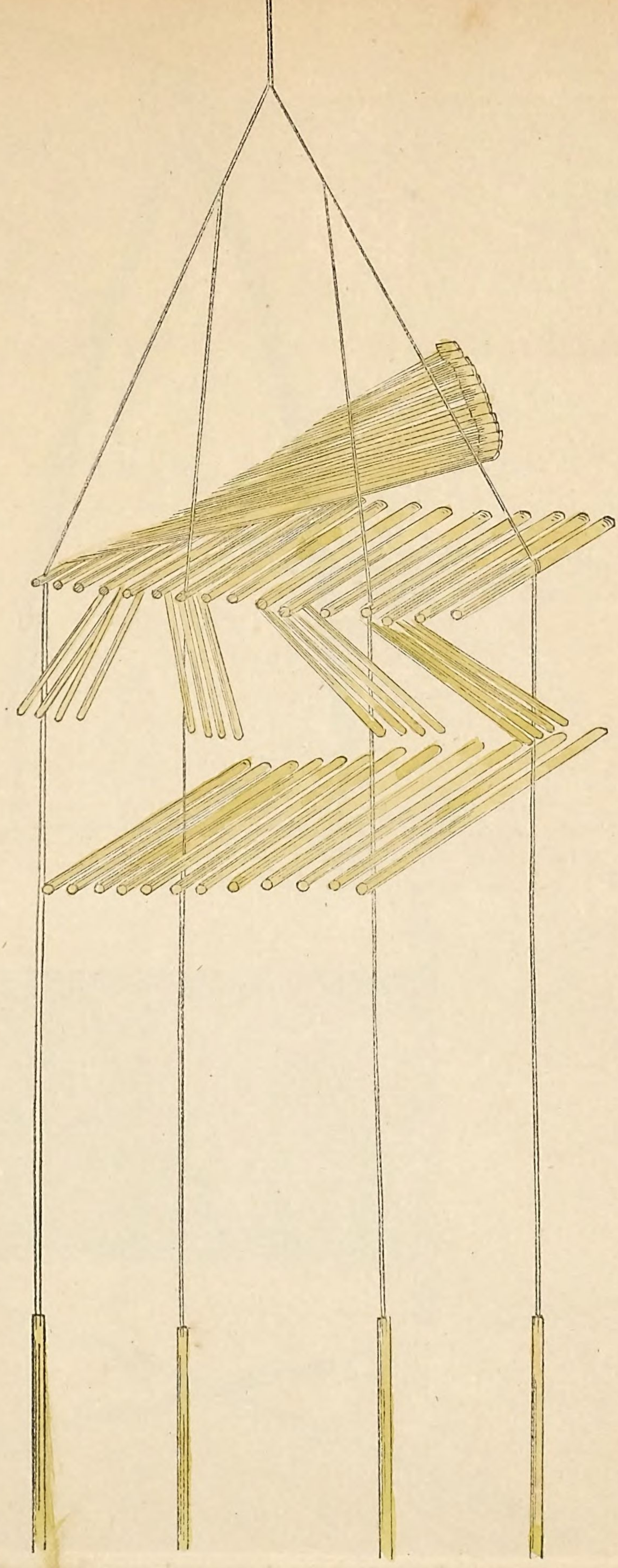
繭蠶野

Fig. XXV.—WILD COCOONS ON STICK FOR CLEANING.



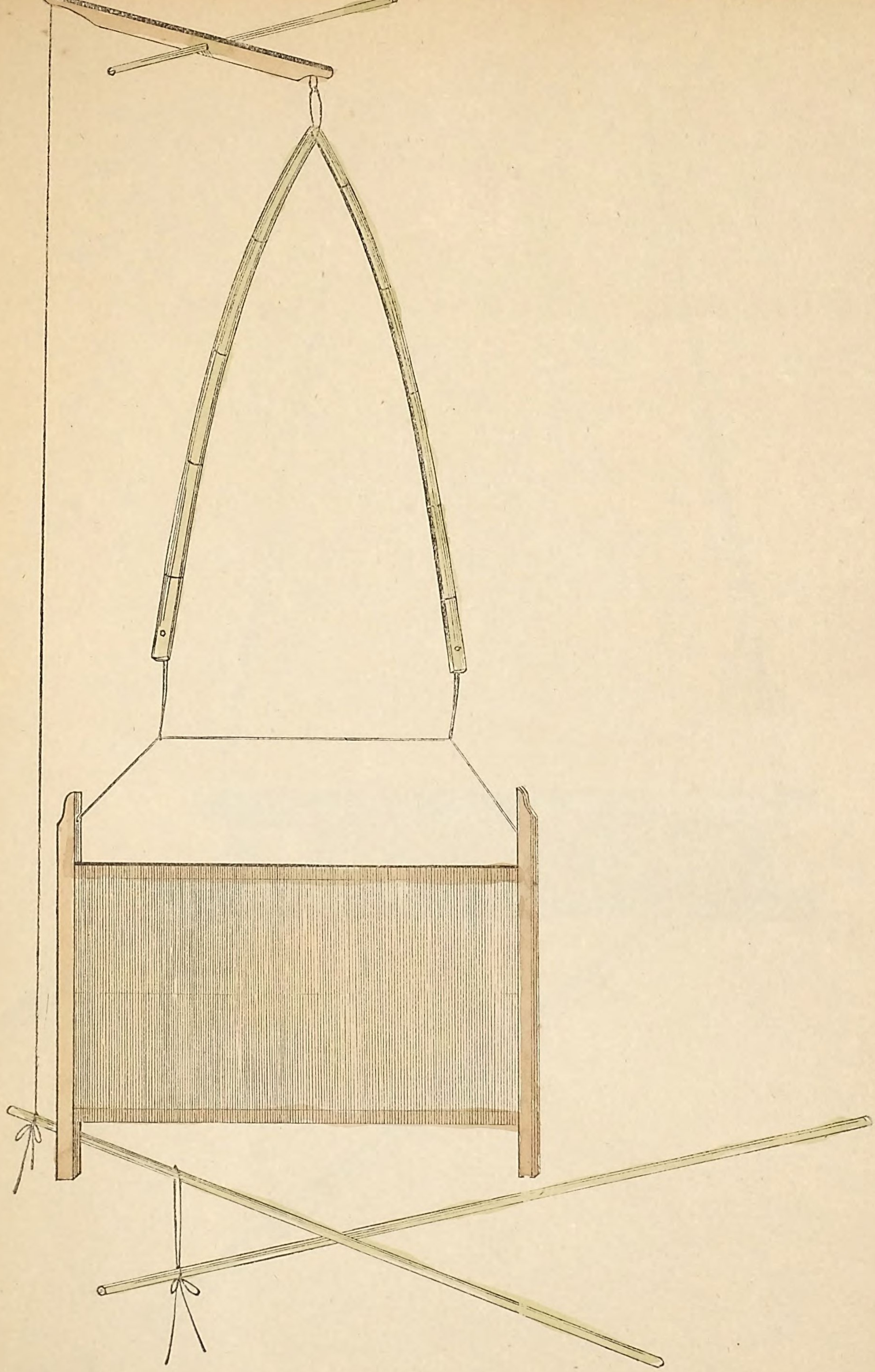
機紬宮

Fig. XXVI.—Loom for the Manufacture of Lingchow and Kungchow Silk.



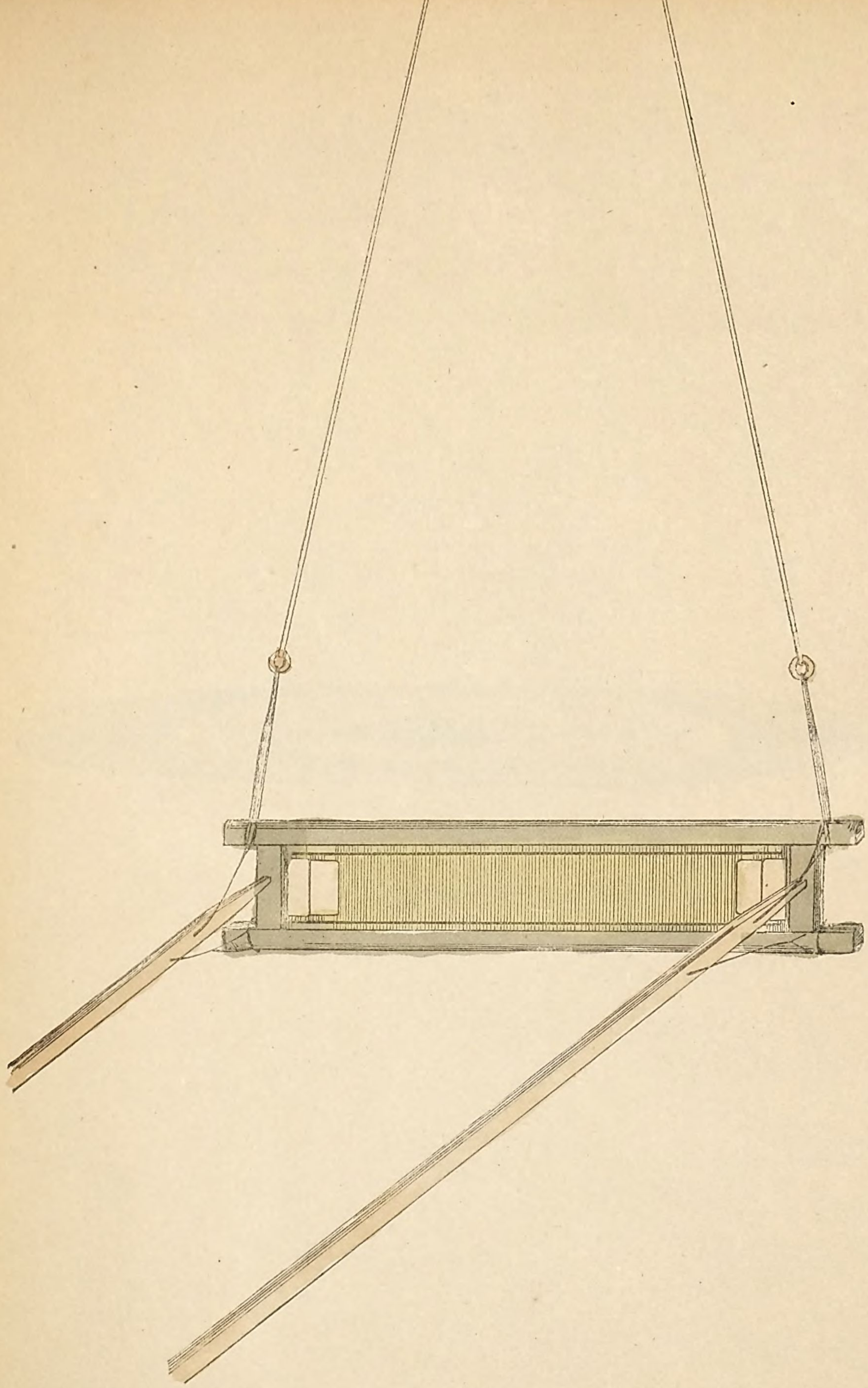
式 緙

Fig. XXVI *a*.—PART OF LINGCHOW LOOM.



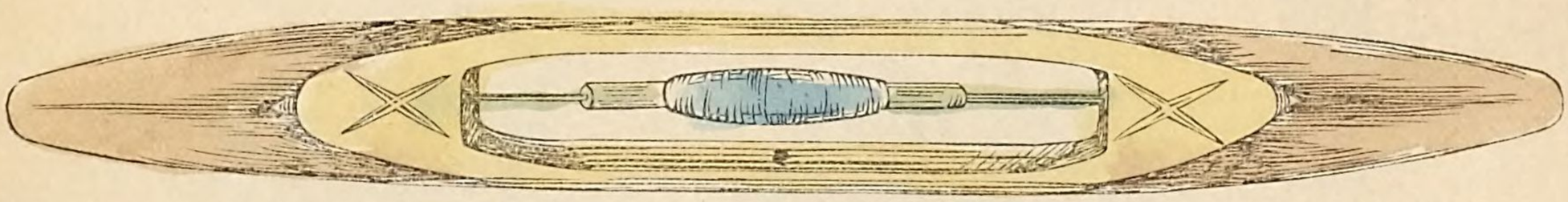
式 子 範

Fig. XXVI *b*.—PART OF LINGCHOW LOOM.



式 扣

Fig. XXVI *c*.—PART OF LINGCHOW LOOM.

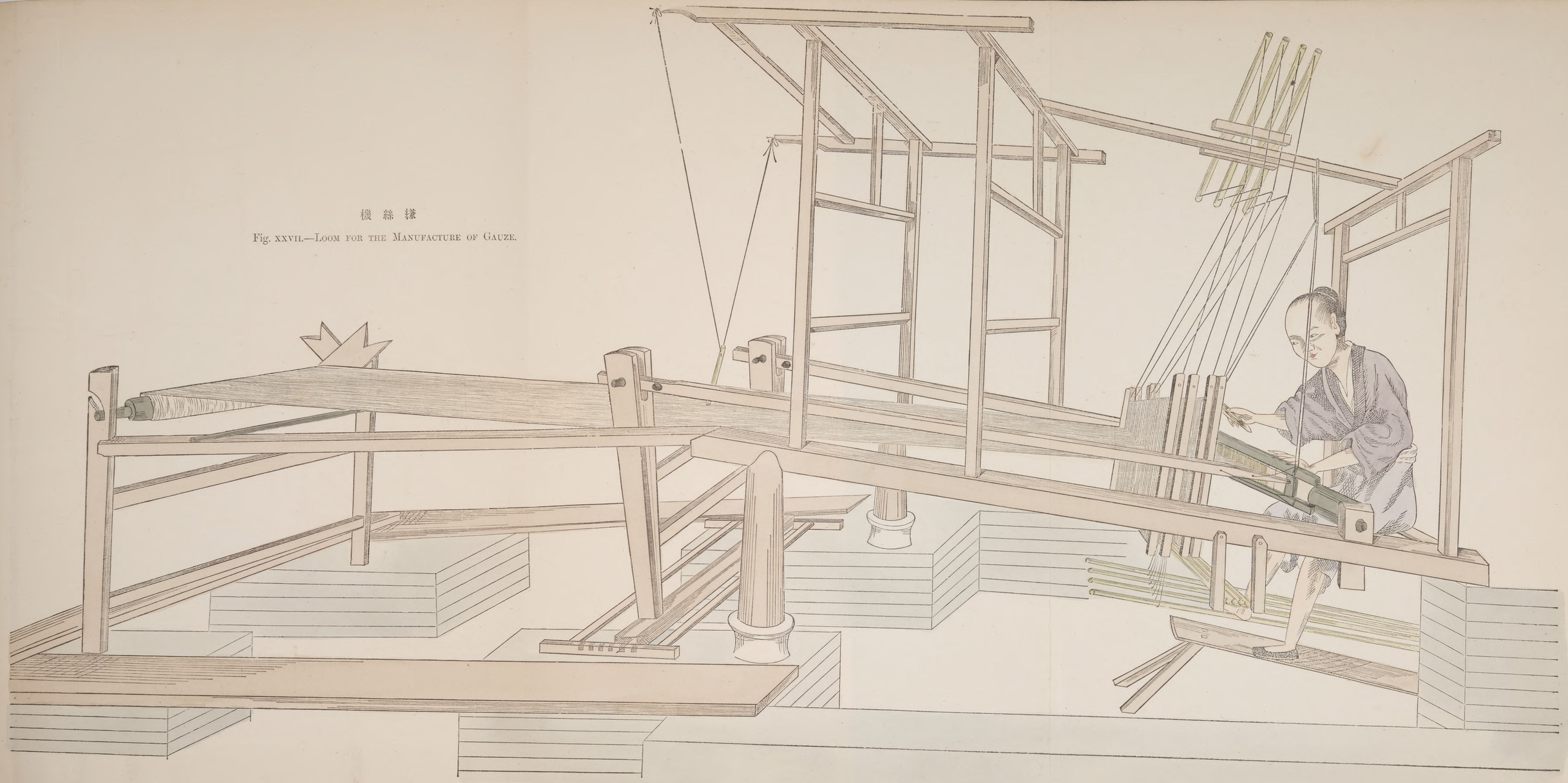


式 梭

Fig. XXVI *d*.—PART OF LINGCHOW LOOM.

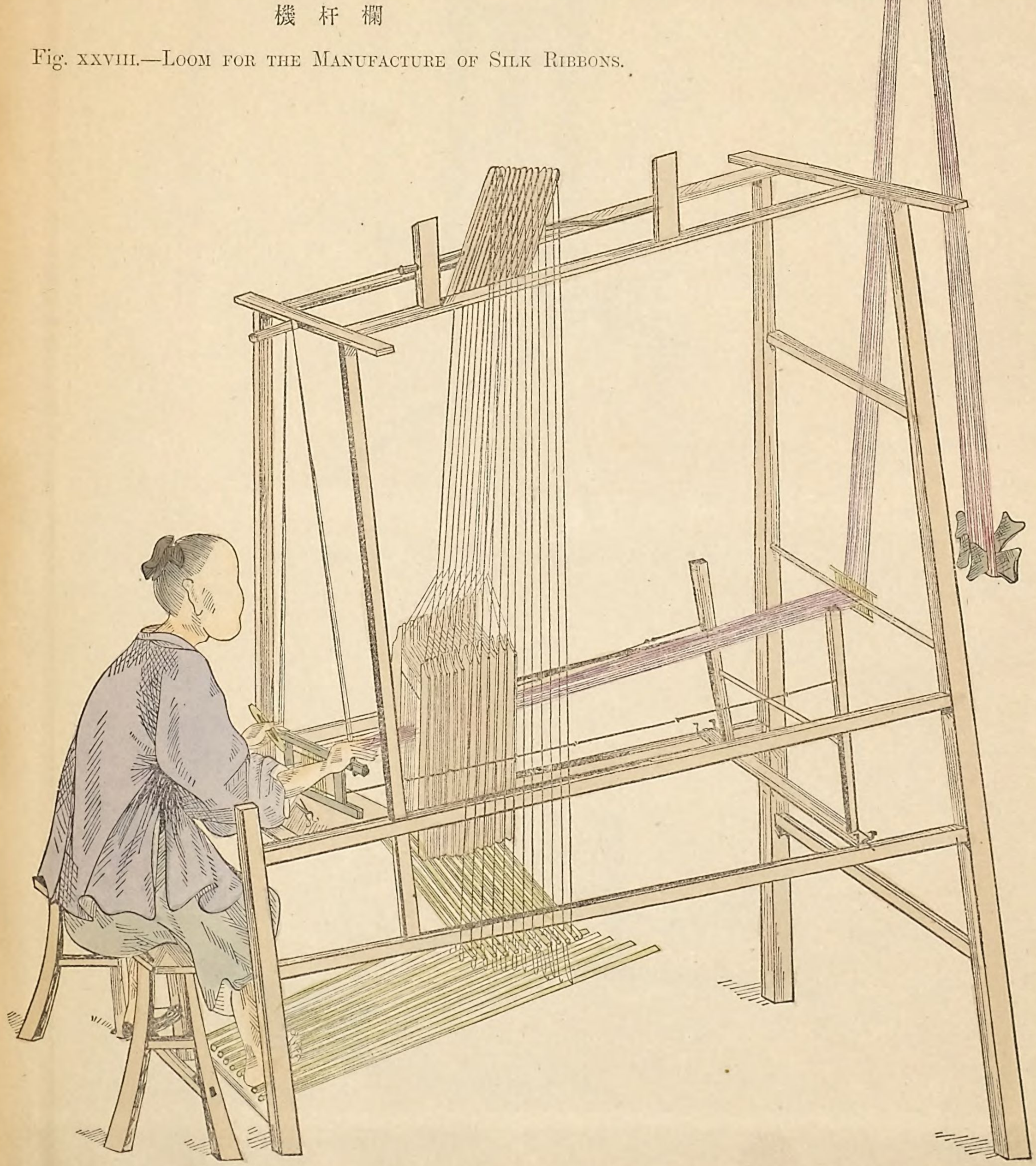
機絲縑

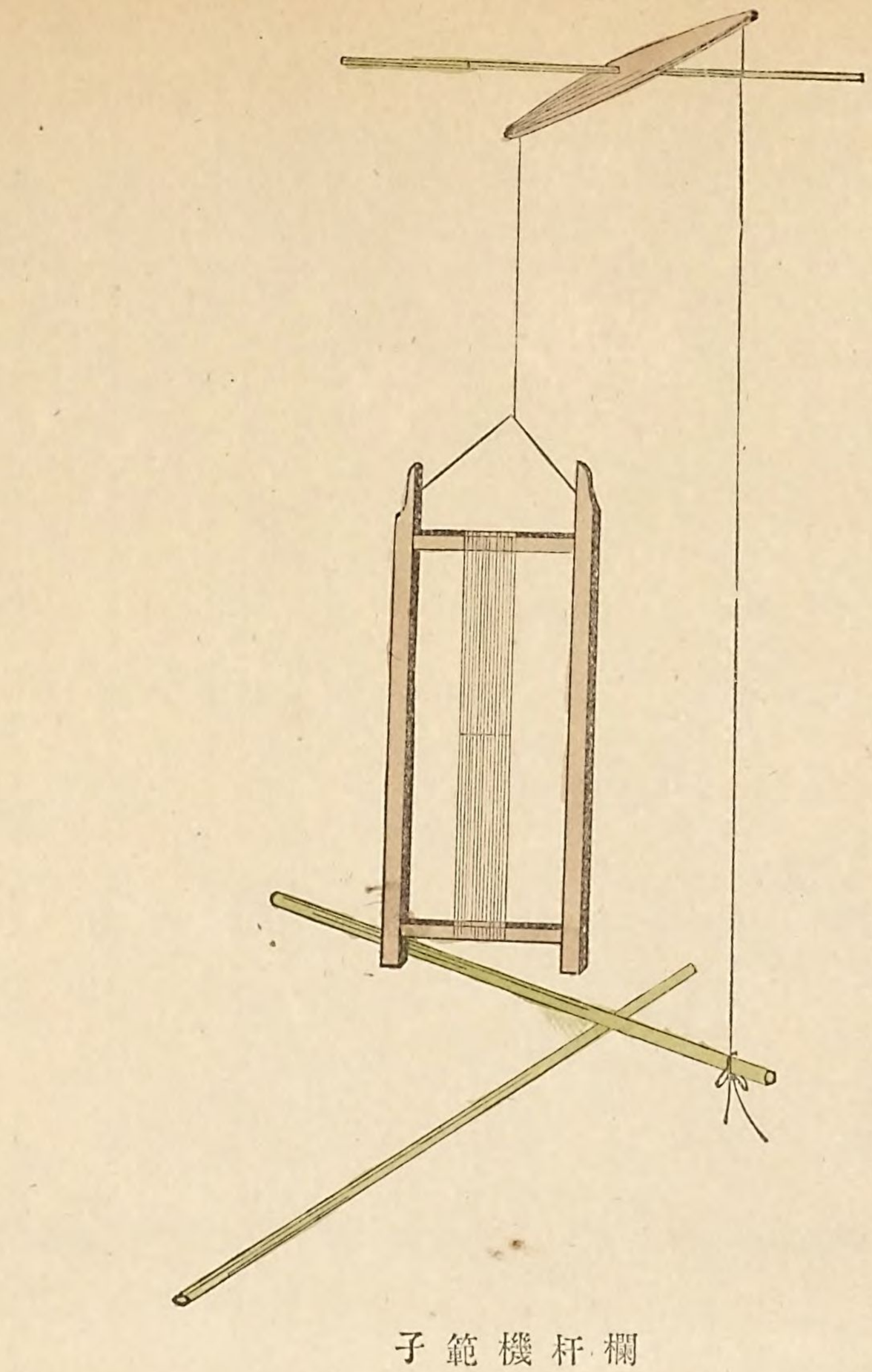
Fig. XXVII.—Loom for the Manufacture of Gauze.



機杼欄

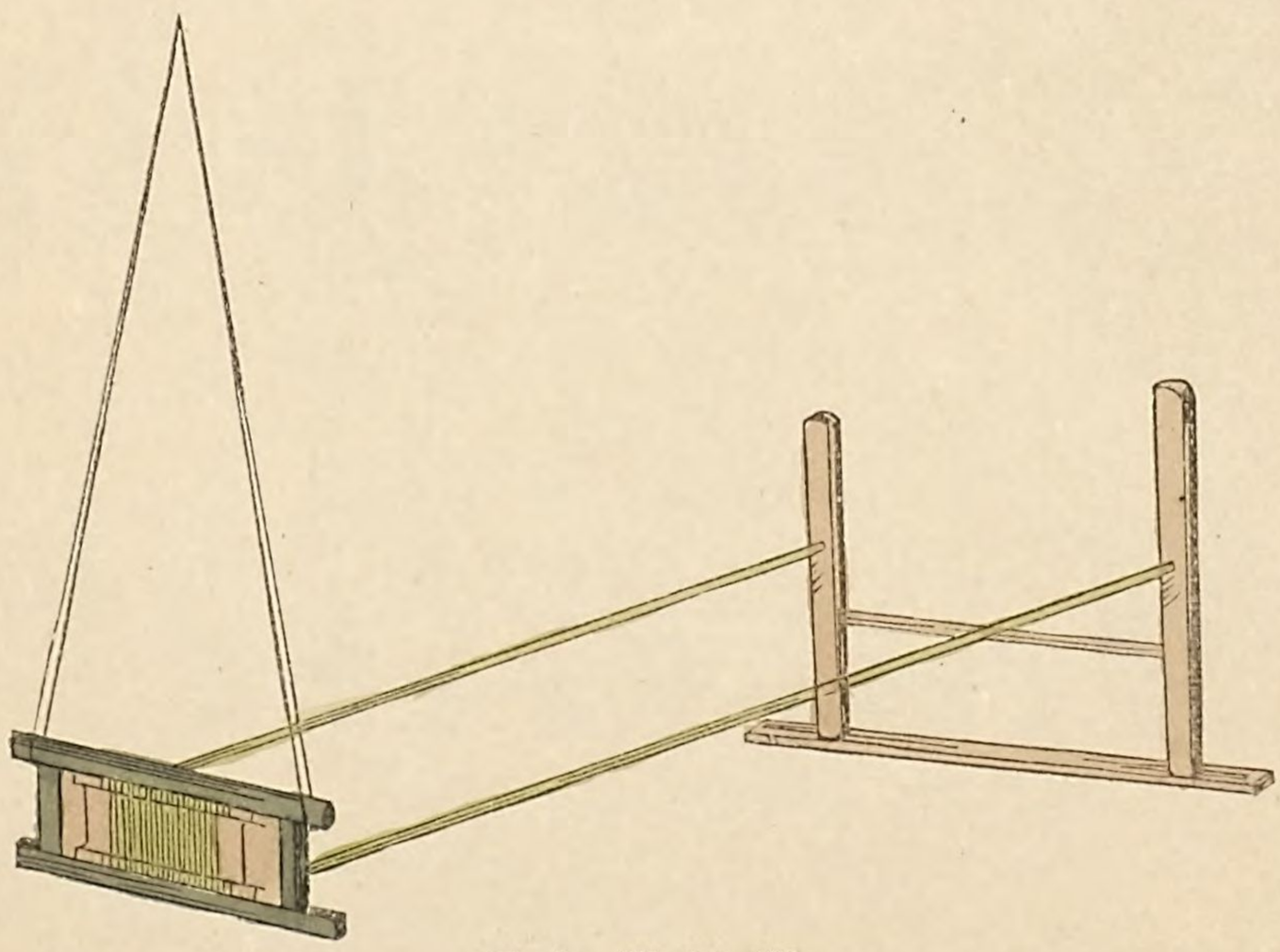
Fig. XXVIII.—Loom for the Manufacture of Silk Ribbons.





子範機杆欄

Fig. XXVIII *a*.—PART OF SILK RIBBON LOOM.



子扣機杆欄

Fig. XXVIII *b*.—PART OF SILK RIBBON LOOM.

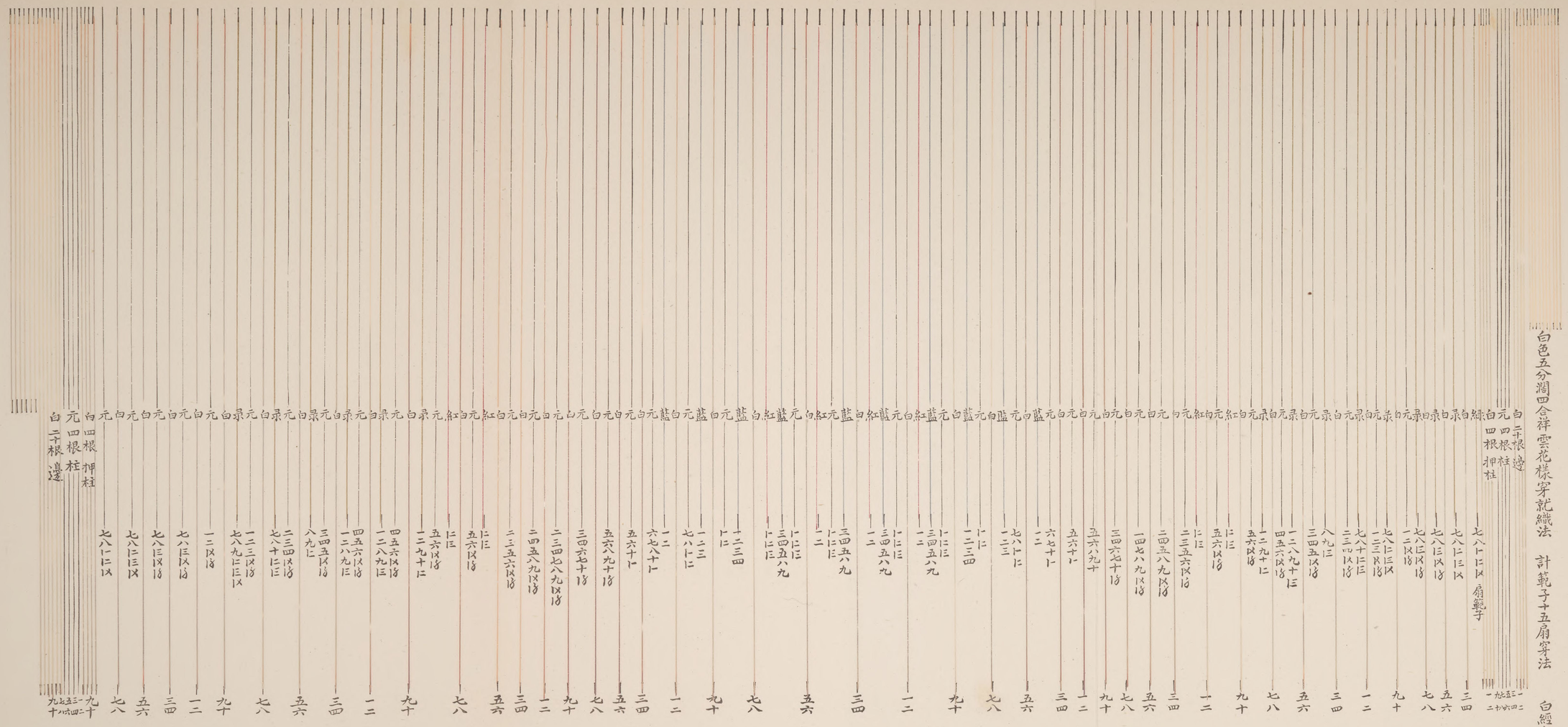
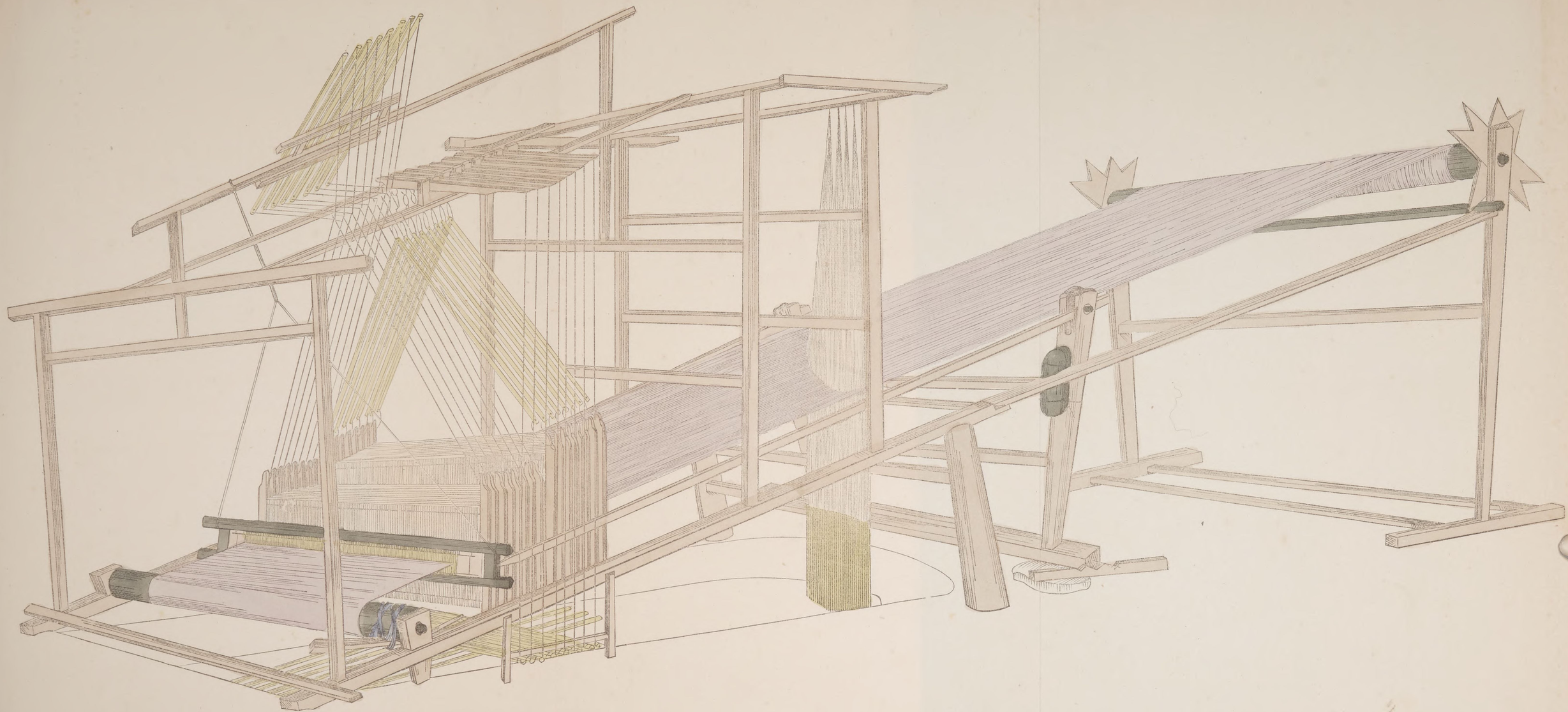
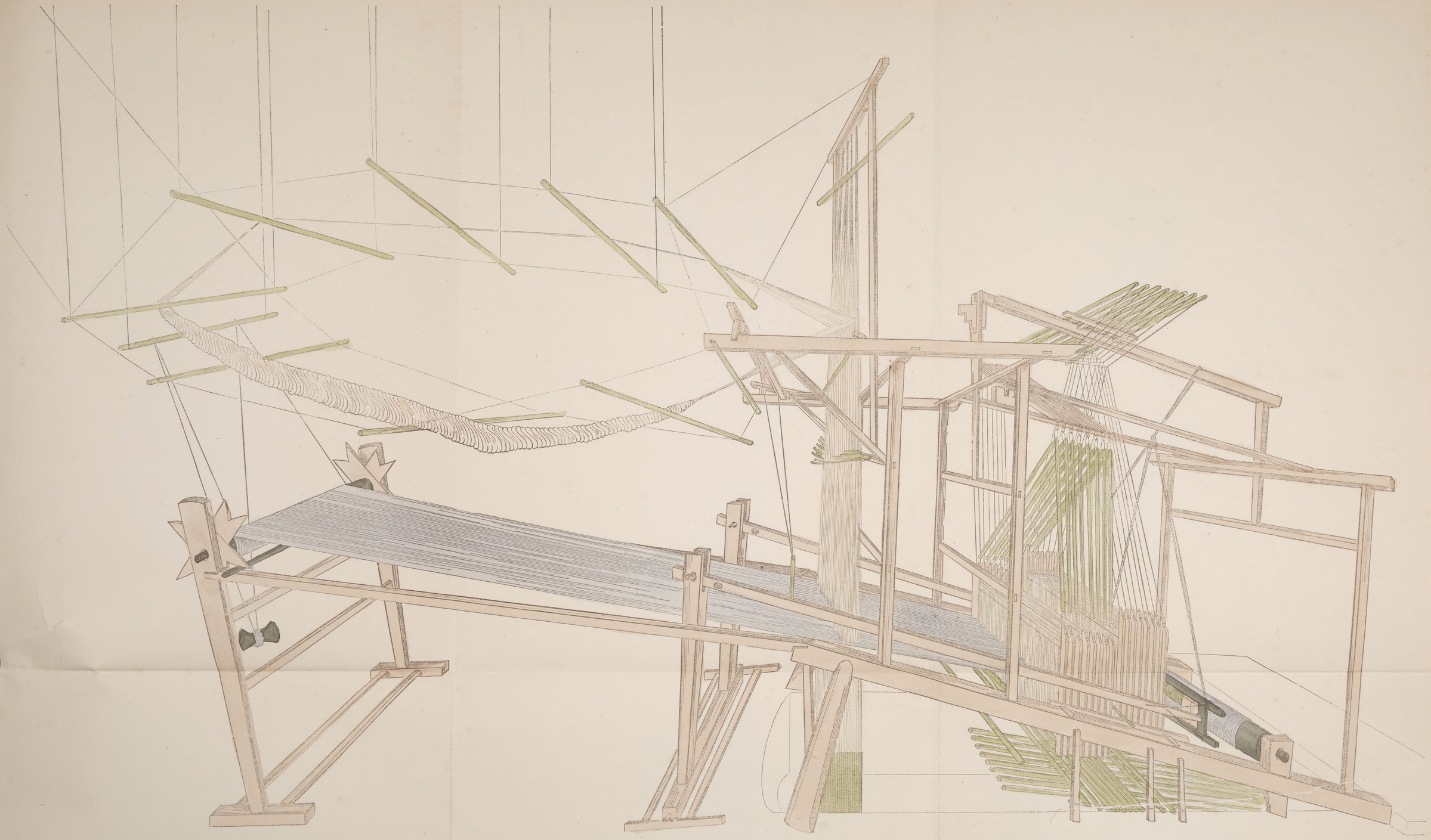


Fig. XXVIII c.—Part of Silk Ribbon Loom.



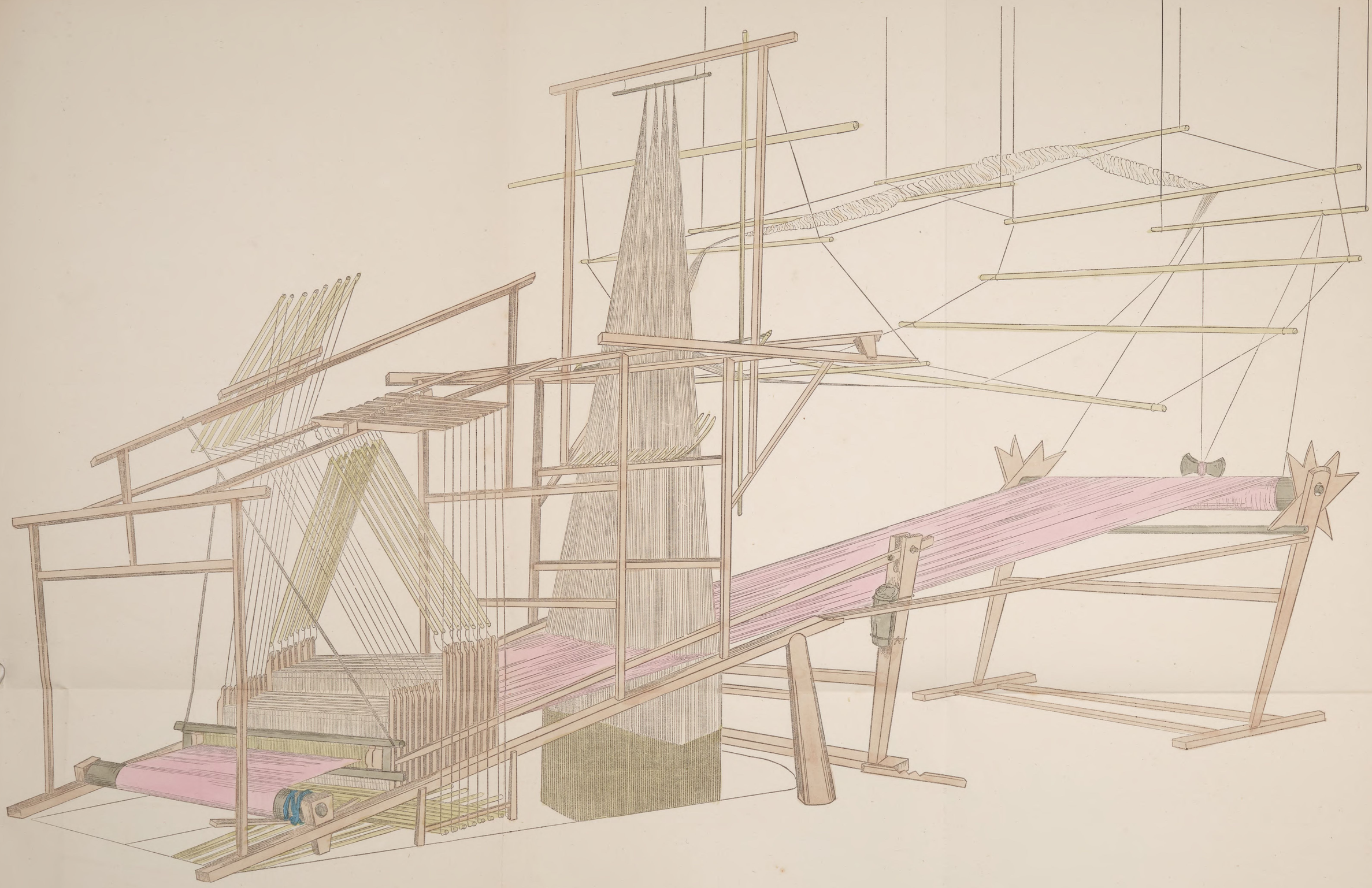
緞機

Fig. XXIX.—Loom for the Manufacture of Satin.



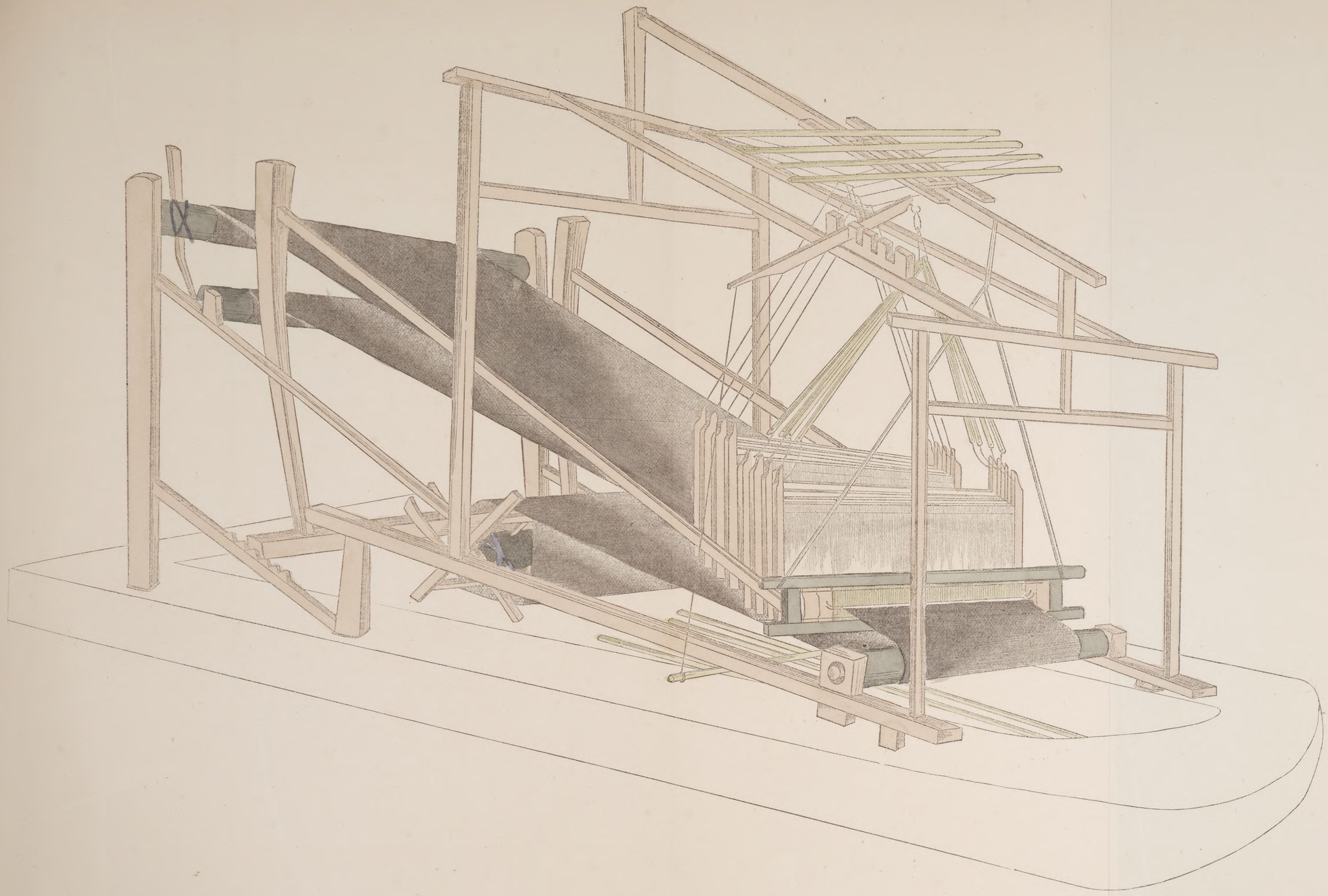
機級本掌

Fig. XXX.—Loom for the Manufacture of Mopên.



機花粧

Fig. XXXI.—Loom for the Manufacture of Chuang'hua.



機絨剪

Fig. XXXII.—Loom for the Manufacture of Velvet.

SHANGHAI.

No. 23.

CUSTOM HOUSE,
SHANGHAI, *4th February* 1881.

SIR,

I HAVE the honour to acknowledge the receipt of your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for.

To enable me to furnish you with as full information as possible as regards the production and manufacture of Silks in the districts contiguous to Shanghai, I instructed Mr. Assistant ROCHER to visit these districts, and to inform me of the result of the inquiries made locally in this connexion, and to procure samples of each manufacture.

I shall therefore confine myself to answering *seriatim* the set of queries contained in the Circular referred to, and append Mr. ROCHER'S Report in full, supplemented by a table giving the quantity of Silk—Raw, Yellow, Wild Raw—and cocoons exported from Shanghai during the years 1875 to 1879.

1°.—1°, in the province of Chiangsu, where Shanghai is situated, nearly all kinds of Raw Silk, the product of worms fed on mulberry trees—wild Silk excepted—are produced.

2°, in the districts in the adjoining province of Chêhchiang, with which this province holds commercial intercourse, nearly all kinds of Raw Silk are likewise produced, and there is in the district of Shuanglin (雙林) a kind of wild worm which makes its cocoon on the ordinary mulberry tree. The product is lighter in weight than the white Raw Silk, and is of a brownish colour. (*Vide* Catalogue, No. 395.)

2°.—The names of the various kinds of Raw Silk are Tsatlee, Taysaam, Haining, Yuanfah, Kahing white, Kahing green, Fokong, Chinkum, Wuhsieh, Liyang.

3°.—1°, the average quantity of Raw Silk (obtained from worms fed with mulberry leaves) produced for export, and apart from that consumed in local manufacture, within the departments of Suchou and Ch'angchou and the district of Liyang in this province, during the years 1878 and 1879, is estimated as follows:—

1878.	1879.	1878.	1879.
Catties.	*Catties.*	*Kilos.*	*Kilos.*
355,350	392,840	213,210	235,704

In the province of Chêhchiang during the same period, in the departments of Huchou, Chiahsing, Hangchou, Shaohsing, and at Ningpo:—

1878.	1879.	1878.	1879.
Catties.	*Catties.*	*Kilos.*	*Kilos.*
4,659,257	5,293,259	2,795,554	3,175,955

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2°, and 3°, there is no production in the districts visited by Mr. ROCHER under these headings.

4°, of Raw Silk, the product of wild worms fed on mulberry trees, the production during 1879 is estimated at 3,200 catties, or 1,920 kilogrammes.

4°.—In the districts visited by Mr. ROCHER in the provinces of Chiangsu and Chêhchiang, there is no Silk obtained from these (1° and 2°) cocoons.

5°.—Three "filatures" have been started at Shanghai for reeling Silk by Foreign machinery:—

The first, in 1862, contained 100 "bassines," but the result was not satisfactory, and the establishment was closed in 1866.

The second, in 1866, containing 10 "bassines," was closed after working a few months, and the machinery was sent to Japan.

The third was started in 1878. It contains 200 "bassines," and I am informed by the proprietors that it is working satisfactorily.

6°.—There are no special establishments to make Thrown Silks in the districts visited by Mr. ROCHER.

Some 12 years ago there were yearly on the market from 12,000 to 15,000 bales, but for years past the demand has gradually decreased, and this branch of the trade has now almost ceased.

7°.—The number of Silk-weaving looms in the district of Suchou is estimated as follows:—

Suchou	5,500 looms.
Ta I-t'ing	500 „
Shêngtsê	8,000 „
TOTAL	14,000 looms.

In the province of Chêhchiang:—

Huchou	4,000 looms.
Hangchou	3,000 „
Shaohsing	1,600 „
Ningpo	848 „
TOTAL	9,448 looms.

8°.—1°, as stated above, there is scarcely any Thrown Silk produced at present.

2°, the annual production of Silk Piece Goods in the district of Suchou is estimated as follows:—

Suchou and Ta I-t'ing	86,940 pieces.
Shêngtsê	900,000 „
TOTAL	986,940 pieces.

In the Chêhchiang province:—

Huchou	204,000 pieces.
Hangchou	71,650 „
Shaohsing	32,500 „
Ningpo	8,400 „
TOTAL	316,550 pieces.

9°.—As far as could be ascertained on inquiry in the Silk districts, the country people and manufacturers agree in saying that the Taiping insurrection did not do any harm to the quality of Silk manufactures. It is, however, well known that a great number of the mulberry trees having been cut down or rooted up by the rebels, the production of Silk decreased for a time very considerably.

The total export, which in 1861–62 amounted to 66,800 bales, fell to 26,300 bales in 1863–64.

After the close of the rebellion in 1865–66, the work was resumed, and since then the production has gradually regained its former condition, and the reeling is said to have improved.

10°.—In the province of Chêhchiang at Hangchou, and in the province of Chiangsu at Suchou and Nanking, there are imperial manufactories where Silk, Satin, etc., are made for the Court, and occasionally private orders are executed.

11°.—There are no Crapes or other Silk goods manufactured in this or the Chêhchiang province from a mixture of mulberry and oak-tree worms' Silks.

Samples of different manufactures and raw material, numbering 400 in all, are forwarded as directed, and the Catalogue accompanying them gives the name of each in English and Chinese, the place of production, use, length, weight, and price per piece.

In the Catalogue:—

1 tael	=	6.50 francs.
100 catties	=	60 kilogrammes.
1 Chinese ounce	=	39 grammes.
1 „ foot	=	35 centimètres.

Besides the samples collected, there are about 150 other kinds of Silk Piece Goods woven on the same principle, and with the same material as Satin, Damask, Crape, Gauze, Lampas, etc., which are manufactured in suits, each suit making up one piece. On account of their peculiar design, it is impossible to cut off small pieces without spoiling the whole. Nos. 60 and 81 are samples of such goods. Each sample catalogued is made in about 15 different colours, and Ribbons of one design are also made in various shades and colours.

I have, etc.,

JAMES H. HART,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,

Inspector General of Customs,

PEKING.

ENCLOSURE No. 1.

CUSTOM HOUSE,
SHANGHAI, *27th December* 1880.

SIR,

I HAVE the honour to submit to you the result of my inquiries regarding the production and manufacture of Silks made during my sojourn at certain of the Silk districts in this vicinity that you instructed me to visit.

Leaving Shanghai on the 28th September last, I returned on the 3rd of November. During that time I visited the producing districts of the provincial city of Suchou, leaving out of my itinerary the north-west departments of Chiangsu, as being included in Mr. Commissioner KLEINWÄCHTER'S district. I also visited the different cities and towns in the adjoining province of Chêhchiang which produce or manufacture Silk Piece Goods.

It may not be out of place, before proceeding further, to say that if the information I have collected has any value, it is the mandarins in charge of the Likin Offices and other branches of that service whom I have to thank for it, as my researches were greatly facilitated by having the abstracts of their books for the years 1878 and 1879 placed at my disposal. If I had not had the assistance of these officials, it would have been impossible, in a region of such extent as I travelled through, where the production is so divided and information so difficult to collect, to obtain any reliable statistics.

The question concerning the production of Silk for exportation was easy to resolve, for not a skein can go out of the district, under penalty of confiscation, without having paid the likin* dues; but in the producing and manufacturing centres—Suchou and the neighbourhood, Huchou, Shêngtsê, Hangchou, Shaohsing, and Ningpo,—I found myself in face of two difficult points to settle:—

1°, the production of Silk specially used for the manufactures over which the officials have almost no control;

2°, the number of looms and the quantity of Silk Piece Goods produced by each.

With regard to these points, however, proprietors of looms, weavers, and merchants have given me information which, except in a few instances, tallied with the statistics furnished by the Likin Offices.

Suchou-fu, the first place I stopped at, is one of the many cities of the Empire which were ruined by the rebellion. Almost all the mulberry trees were rooted up or destroyed, a great part of the population engaged in the Silk trade was dispersed, and a general falling off in the trade was the result of several years of disturbance. Since the re-establishment of peace, new trees have been planted, old establishments have been re-opened, new ones erected, and at the present moment it is considered that the production of Raw Silk is equal to, if not larger than, what it was before the rebellion.

* Since 1878 the likin tax has been reduced from $26 to $24 per bale.

The following table, compiled from the local statistics drawn up by the General Likin Office, shows the production of Silk for export in the departments of Suchou, Ch'angchou, and Chinkiang during the last two years:—

DISTRICT.		1878.	1879.	1878.	1879.
		Catties.	*Catties.*	*Kilos.*	*Kilos.*
Department of Suchou.....	Suchou	55,200	60,950	33,120	36,570
	Shêngtsê.....	27,600	28,750	16,560	17,250
Department of Ch'angchou	Wuhsieh.....	138,000	153,640	82,800	92,184
	Pinniu	3,450	4,600	2,070	2,760
	Ihsing.....	4,600	6,900	2,760	4,140
Department of Chênchiang (Chinkiang)	Liyang	126,500	138,000	75,900	82,800
TOTAL.....		355,350	392,840	213,210	235,704

Further increase in the quantity may be expected before long, as a large number of young trees have recently been planted.

Besides the production of Raw Silk for exportation, which is comparatively small, Suchou has always been—except during the war—one of the important centres of Silk Piece Goods manufacture, both as regards the quantity and the quality produced, the brightness of the colours, and the variety of designs.

The number of looms, estimated before the rebellion at 12,000, is now reduced to 5,500, and many of these do not work all the year round. This industry, however, is improving with the production of the raw material, and though the prices are pretty firm, the demand is increasing.

The statistics, compared with notes supplied by merchants, give the following figures:—

YEAR.	Number of Looms per Month.	Average Production monthly per Loom.	Quantity produced monthly.	Total Production per Year.
		Pieces.	*Pieces.*	*Pieces.*
1878.....	1,816	3	5,448	65,376
1879.....	2,127	3	6,381	76,572
SATIN, PLAIN, manufactured by Nanching Men.				
1878.....	270	4	1,080	12,960
1879.....	216	4	864	10,368

These figures exhibit an increase of 8,604 pieces in favour of last year, 1879. The average outturn per year of Silk manufactured in the district of Suchou during this period

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is therefore 82,638 pieces. Taking the weight of each piece at 38 taels, gives 82,638 × 38 = $\frac{3,140,244}{16}$ taels = 196,265 catties, or 117,759 kilogrammes. Adding 35 per cent., which Silk merchants and manufacturers say represents the average loss caused by the different preparations the raw material has to pass through, such as boiling, dyeing, re-reeling, etc., a total of 264,957 catties, or 158,974 kilogrammes, is obtained as representing the amount of Raw Silk locally employed during each of the years 1878 and 1879 for manufacturing purposes.

If the Raw Silk thus used has not paid duty, there is a likin tax of *Tls.* 0.43, or 2.79 francs, on each piece of manufactured Silk. Besides this charge, all the looms in the city are taxed—large ones paying $2, about 10 francs, each, and small ones $1.50, or 7.50 francs, each, monthly. Merchants call *large* looms those in use for weaving Satin, plain or figured; and *small* looms those for weaving narrow stuff, as Velvets, etc.

The town of Ta I-t'ing, situated 25 *li* east of Suchou, contains about 500 looms employed weaving Gauze, but these looms are not taxed.

There are in Suchou about 300 or 400 establishments where Silk is boiled and afterwards dyed, but, as far as I have been able to ascertain, there are none for the purpose of reeling Silk.

Each manufacturer buys the quantity of Silk necessary for the work he has to do, and, after having boiled and dyed the Raw Silk, it is re-reeled by members of his family.

The art of preparing patterns for the composition of flowers, new designs, etc., is a monopoly in the hands of about 200 or 300 men. Their salary ranges from $0.75, or 3.75 francs, to $1, about 5 francs, per day, according to the difficulty of the work. A good hand takes generally two days to mount on the loom a piece of figured Satin 200 feet, or 70 mètres, long, divided into four parts of 50 feet each, or 17½ mètres, long. This class of workmen only mount the "organzine" on the looms, or compose new patterns. When the same pattern has been mounted three or four times in presence of the weaver, and if the same design is to be repeated, the weaver then does the mounting himself without the assistance of the draughtsman.

Two men are required to work a loom for Damask or figured Satin. The weaver employs one of his pupils as assistant. A seat is arranged at the top of the loom, and from this he pulls the strings, whilst the weaver passes the shuttle. Such a workman receives $4.50, or 22.50 francs, for each piece of 50 feet, or 17½ mètres, long, and pays his assistant himself. The time occupied in weaving such a piece is from 10 to 12 days.

Looms for Gauze, binding, etc., are also worked by two men on the same principle as the former, but the loom is not quite so broad. The weaver himself mounts the organzine, and, including the pay of the assistant, receives $1.80, or 9 francs, for each piece of about 38 feet, or 13.30 mètres, long, besides being boarded by the employer.

In addition to the Silk Piece Goods manufactories, there are in the city about 2,000 looms employed weaving Ribbons. The Silk used for this kind of work is in the proportion of three-fourths from the Huchou district and one-fourth from Suchou. It is impossible to ascertain the actual quantity of Ribbons manufactured, as the people engaged in this industry work very irregularly, and the officials have no control over them. The general working of these

looms will be explained further on in connexion with the Shanghai production. Among the numerous kinds of manufactured Silk of which Suchou is the centre, embroidery work may be mentioned, which, though not done mechanically, may nevertheless be considered as a part of the Silk industry of the place and its environs.

Not less than 350 families, representing about 1,050 working people, are engaged in this trade. This work, requiring a good deal of time and also good eyes, is principally done by women and young girls. It is only when large hanging embroideries are required that men come forward for the heavy work. A certain number of houses, known on account of their speciality, receive the orders and divide the work among different families. It is difficult to estimate the quantity of embroidery manufactured yearly, but it is considerable, for not only is there a good demand for this article in China, but there is also a certain quantity specially ordered for Foreign markets.

Wuhsieh was the second city I visited.

The official in charge of the Likin Office furnished me with a statement of the Silk exported, which agreed with the one given me at Suchou. He also supplied me with the following figures, giving the export of cocoons from the district during the last three years, which compare thus :—

1878.	1879.	1880.	1878.	1879.	1880.
Catties.	*Catties.*	*Catties.*	*Kilos.*	*Kilos.*	*Kilos.*
28,100	38,500	79,400	16,860	23,100	47,640

These figures, however, cannot be taken as statistics of the export of cocoons, as the amount represents that from the district of Wuhsieh alone; they are simply given to show the general increase in this local trade.

In former years merchants had, and even now find, difficulty in buying cocoons, the reason being that during the Silk-reeling season the country people, having no work to do in the fields, find it more profitable to keep the cocoons and employ their families in reeling Silk from them; but it is hoped that, as the quantity of silkworms increases every year, they will have no time for reeling all their crop, and that they will therefore sell a larger proportion.

This district, as well as that of Suchou, produces two crops. The first one is the Taysaam, or Tatsan (大蚕), which makes the large cocoon. This crop is generally more productive, and the cocoon is of a better quality. Six to 10 cocoons are employed in the reeling of 1st quality Silk. The second crop comes on about 25 days after the first; the worm is smaller, Hsiaotsan (小蚕), and the cocoon is inferior in quality. This Silk, which is called Huangssŭ (荒絲), Wild Silk, is coarser and darker in colour than the former; it is reeled from 18 to 25 cocoons.

Crossing the T'ai-hu (太湖, Great Lake) at its north-west corner, I went to Ihsing (宜興), in order to have a second check on the information furnished by the Suchou officials.

Ihsing is a dead city, ruined by the rebellion. The trade, which never was important, is now almost *nil.* At the present time the Silk trade of this district is carried on by Chinese

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merchants, who go there during the Silk season, and return to their respective cities when the crop is all sold. The mandarin in charge of the likin station informed me that the district produces only the small worm and small cocoon. The Silk of first quality is reeled from 9 to 12 cocoons; and the second quality, which is much coarser, is reeled from 18 to 22.

Only a part of the fine Silk goes to Shanghai, the balance, together with that of coarser quality, is sent to Chênchiang and Nanching, where it is employed partly for manufacturing purposes and partly to make Silk thread and tassels.

Information from the Likin Office having once more been found to agree with the particulars furnished me at Suchou, I proceeded to Huchou by crossing the T'ai-hu from west to south.

Huchou holds the first place among the departments of the whole Empire of China for the production of Silk, and the country people consider it their most important staple.

The following is the production of the department, arranged by districts according to the official statistics :—

District.	1878.	1879.	1878.	1879.
	Catties.	*Catties.*	*Kilos.*	*Kilos.*
Hsinshih (新 市)	304,436	337,822	182,662	202,693
Wuchên (烏 鎮)	10,348	13,846	6,208	8,307
Ch'ingchên (青 鎮)	225,319	248,492	135,192	149,095
Lienshih (槤 市)	36,366	48,900	21,819	29,340
Linghu (菱 湖)	832,867	908,446	499,720	545,067
Nanhsin (南 潯)	492,310	576,844	295,386	346,108
Shuanglin (雙 林)	218,592	253,050	131,155	151,830
Ch'anghsing (長 興)	128,053	141,478	76,832	84,886
Wuk'ang (武 康)	1,196	1,196	718	718
Huchou-fu (湖 州 府)	675,745	774,122	405,447	464,473
Total	2,925,232	3,304,196	1,755,139	1,982,517

Whilst I was at Huchou, proprietors, and merchants in particular, complained a good deal of the low prices paid for Tsatlee, and they assured me that as the ordinary coarse Silk for manufacturing purposes realised a better paying price, they had decided to reduce the quantity of Tsatlee, in order to make more Silk for the Chinese market.

In addition to producing fine Raw Silk, the district of Huchou manufactures two kinds of Silk Piece Goods, one called Huchou (湖 綢), a kind of Crape, figured and plain, made out of the raw material, which is boiled and dyed after it is taken out of the loom; and the other, called Miench'ou (棉 綢), a peculiar kind of stuff (*see* Catalogue, samples Nos. 200 to 206), having the appearance of cotton goods, which is made out of Silk refuse (*see* Catalogue, samples Nos. 398 and 399) and prepared in the same way as the above.

The organization of the Silk Piece Goods manufactories at Huchou is entirely different to that of the manufactories at Suchou. There are but few men in the neighbourhood of Huchou who earn a livelihood by weaving, as is the case at Suchou. All the country people within a radius of 20 *li* are more or less acquainted with weaving work, but they only devote themselves to it when there is no important agricultural work to do, such as looking after the silkworms, preparing the fields, planting and cutting paddy, etc.

From statistics furnished me by the officials and by merchants engaged in the Silk Piece Goods trade, it appears that out of 4,000 looms in existence in the district, 2,040 work all the year round. It is customary to count 300 working days only in a year, on account of the new year holidays and the time occupied in looking after the silkworms and reeling Silk, etc. Each loom produces about one piece every three days, or 100 pieces per year, and the average weight of each piece before boiling and dyeing is 33.80 taels; that gives 2,040 × 100 = 204,000 × 33.80 = $\frac{6,895,200}{16}$ taels = 430,950 catties, or 258,570 kilogrammes, which represents, according to the most reliable information, the average annual quantity of raw material used in the local trade.

Miench'ou, used for undershirts, etc., is partly woven by women and partly by men. It is very seldom exported to other districts. The production is estimated to be 3,000 pieces per year. Looms for figured Crape are worked by two men, and for plain Crape or plain Satin by one. The mounting on the loom of both kinds of Crape is done by the weaver himself. As proprietors of looms do not always perform the work themselves, a labourer is hired for the purpose. In this case the salary of the weaver and his assistant is divided as follows: the former receives $0.75, or 3.75 francs, and the latter $0.50, or 2.50 francs, making in all $1.25, or 6.25 francs, per piece of 48 feet, or 16.80 mètres, long, requiring three days to make.

There is a likin tax of *Tls.* 0.34, or 2.21 francs, on each piece of Crape exported from the place of production, but the looms are not taxed.

About 10 years ago the Fant'ai, or Provincial Treasurer, in order to raise money to repair several monuments and bridges that had been destroyed by the rebels, and to increase the revenue, proposed taxing the looms on the same principle as prevails at Suchou; but the people interested in the matter did not take any notice of the proposition until the new regulation was about to be put in force, when they declared that such a tax was illegal, owing to their living outside of the city. On his insisting on the payment of the tax, a number of them went into the city and informed the Prefect that by enforcing such a rule the industry of the department would be ruined, and they declared that not a piece of Crape would be produced in the district if the tax was levied. The Prefect, in presence of such an important strike, and fearing a disturbance among the population, referred the case to the capital, with the result that the tax was withdrawn and the work resumed as before.

The official in charge of the General Likin Office of the department, who during my stay at Huchou did all he could to facilitate my inquiries, gave me letters of introduction not only to the Weiyüans in charge of the Likin Offices under his jurisdiction, but also to several Silk merchants.

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Leaving Huchou, I visited Linghu and Shuanglin. The last-named town is the centre of production of a wild silkworm which is picked off the mulberry tree by the country people. This particular kind of cocoon (*see* Catalogue, specimen No. 400) is very little known by Chinese, and still less by Foreigners.

The quantity of Silk it produced last year is estimated at 3,200 catties, or 1,920 kilogrammes.

At present there is only one Chinese firm established at Shuanglin for the purpose of collecting cocoons and sending them to the village of Hsiyang (西陽), situated 20 *li* north-west of Shuanglin, the only place where this kind of cocoon is reeled. On account of its peculiar quality, it requires to be boiled longer, and owing to its small size it is difficult to reel. I was informed that 2 catties of cocoons, or 1.20 kilogrammes, produce 3.50 ounces (Chinese), or 136.50 grammes, of 1st quality Silk. All the Wild Silk thus produced is used in the district for weaving a kind of common Crape and plain Silk (*see* Catalogue, samples Nos. 226 and 227), the work being performed by women and young girls at spare moments. This stuff is dyed black, and cut in pieces varying in length from 2.80 feet, or 90 centimètres, to 3 feet, or 105 centimètres, which are worn round the head by Chinese ladies. The total quantity manufactured not being consumed in the department, the surplus is exported to the provinces of Chiangsu, Anhuei, and Hupei.

The gathering of this wild cocoon is carried on from the end of the sixth to the beginning of the eighth month. After that time the worms which are not ready to make their cocoons suffer from heavy dews and cold nights, the mulberry leaves become hard, and they can feed on the under part of the leaf only. As the weather gets colder and the leaves harder, they stop feeding, and in the effort to make a cocoon they only succeed in making a sort of thick gauze which hangs from one twig to another.

The first place I noticed the existence of this wild worm was at Huch'i-kuang, a barrier situated in the province of Chiangsu, at the entrance to the west side of the T'ai-hu. All the mulberry trees along the river were covered with this kind of gauze, and not a single green leaf was to be seen; each tree, as well as the ground underneath, was covered with millions of live cocoons. From there to Hangchou I found mulberry trees more or less in the same state. As far as I have been able to ascertain, there is no doubt that this worm, except that it is smaller in size, is a degenerate form of the ordinary silkworm; and this may be explained by the fact of the country people having been obliged to leave their homes at the approach of the rebels, just as they were busily engaged in breeding worms, and the butterflies, being left to themselves, laid their eggs anywhere, so that in process of time the worms partook more and more of a wild nature.

What leads me to believe that the above statement is correct is that before the invasion of the country by the rebels this kind of wild worm was unknown. Its first appearance was noticed in the second year of the Emperor T'UNGCHIH (1863), when a few cocoons were gathered from the mulberry trees by people engaged in cutting off the small branches. They were then considered a curiosity, but the following year the quantity had considerably increased, and now the crop is about 40 bales a year.

If the Chinese would devote a little attention to these wild worms, that is to say, when there are too many of them for the number of trees, take the excess to another field where there

is a scarcity, the worms, finding enough to eat, would probably make their cocoon sooner, and these cocoons, requiring only the trouble of gathering, would be remunerative labour to those engaged in it.

Leaving Shuanglin, I proceeded to Nanhsin (南 潯), or Nanzing in the local dialect. Though this district was long in the hands of the rebels, the inhabitants are so active and the trade so prosperous that all traces of the rebel occupation have entirely disappeared.

The principal production of this district is Silk of a superior quality. It is also a market for re-reeled Silk produced in this and the neighbouring districts; the demand for that material, specially prepared for the American market, increases yearly, amounting to 700,000 catties, or 420,000 kilogrammes, during the past year.

The re-reeling is generally done in the country by women, boys, and young girls, who are paid at the rate of 10 *cash* per tael in weight. A good hand makes from *Tls.* 3 to *Tls.* 5 per day, which represents a maximum earning of 50 *cash*, or 0.49 francs, per day. The average loss on Silk thus prepared is from 10 to 15 per cent., and about one half of this refuse is sold to Silk thread manufacturers, thus reducing the loss by about 7 per cent.

A part of the waste Silk taken off the cocoons is made into thread and woven by women during their spare time, and the product is Miench'ou, the same stuff as that of which I have already spoken in the industries of Huchou. The yearly production of this article for the whole district of Nanhsin is about 3,500 pieces.

From the last town, to go to Shêngtsê (盛 澤), Chentsa in the local dialect, I had to re-enter the province of Chiangsu.

Shêngtsê, though not so important as Nanhsin as far as the population and general trade are concerned, is nevertheless a great manufacturing centre.

The principle of the organization at Shêngtsê is the same as that at Suchou. There are large firms in the town which receive the manufactured goods from the country people, who in return buy the Silk needed to carry on their work. Nearly all the looms, numbering about 8,000, are within a circle of 25 *li* round Shêngtsê. The great portion of the Silk Piece Goods produced, being light in weight, is manufactured by women, who re-reel the Silk, prepare the tram, organzine, mount the piece on the loom, and weave it. The average pay of a weaver for a piece 45 feet, or 15.75 mètres, long, is $0.35 ; and $0.14 per piece 16 feet, or 5.60 mètres, long.

A good hand, either man or woman, takes two days and a half to weave a piece 45 feet long, and one day only for a piece 16 feet long; the last, however, is not so wide as the former.

From the result of my inquiries, it appears that the regular production of Silk Piece Goods is 3,000 pieces per day; this amount of course includes all kinds of Silk goods. The number of working days during the year being 300, this gives $3{,}000 \times 300 = 900{,}000$ pieces; taking the average weight of each piece at 9 taels, we have $900{,}000 \times 9 = \frac{8{,}100{,}000}{16}$ taels $= 506{,}250$ catties, or 303,750 kilogrammes. The weight lost in the preparation of the Silk, which at Suchou is 35 per cent., is reduced here to 15 per cent. Thus, adding 15 per cent., a total of 582,187 catties, or 349,312 kilogrammes, represents the amount of Raw Silk employed. As at Suchou, this Silk is not all produced in the district, but comes from Nanhsin, P'inwang, and the largest portion from Chiahsing-fu.

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Crossing again the boundary of the province of Chêhchiang, I arrived at Chiahsing-fu. This city has suffered a great deal from the rebellion. I found it almost in the same state as when I saw it 12 years ago. Very few houses have been rebuilt, a great portion of the city is still in ruins, and the suburbs, which before their occupation by the rebels were so important, have entirely disappeared.

The Silk production of this district is, however, important, and, according to statements furnished me by the officials, is as follows:—

DISTRICT.	1878.	1879.	1878.	1879.
	Catties.	*Catties.*	*Kilos.*	*Kilos.*
Wangtien (王 店)	37,260	43,792	22,356	26,275
T'utien (屠 甸)	20,700	17,020	12,420	10,212
Nanyin (南 堰)	174,616	119,048	104,770	71,429
Hsinhuang (新 篁)	104,581	120,520	62,748	72,312
Haiyen (海 鹽)	117,208	146,464	70,325	87,878
Chiashan (嘉 善)	95,956	77,740	57,573	46,644
P'inghu (平 湖)	118,795	157,596	71,277	94,558
Tunghsiang (桐 鄉)	7,635	8,280	4,581	4,968
Puyüan (濮 院)	21,988	23,920	13,193	14,352
Hsint'êng (新 塍)	31,004	48,116	18,602	28,870
Shihmên-chou (石 門 洲)	47,748	85,652	28,649	51,391
Wangchiang-ching (王 江 經)	...	5,520	...	3,312
TOTAL	777,491	853,668	466,494	512,201

This district produces two kinds of Silk, white and green.

Some years ago, after the rebellion was over, about 2,000 looms were established in the city, but a tax of $1 per month being levied on each loom, the workmen, finding the charge too heavy, removed their looms to the district of Shêngtsê, and at present there are in this city not more than six looms, producing Silk for lining purposes.

The statistics furnished by the mandarin in charge of the Likin Office of the department being found to agree with those at the barriers I had an opportunity of visiting, I proceeded to Hangchou.

The department of Hangchou-fu, capital of the province of Chêhchiang, though a great producing and manufacturing centre, is far below Huchou as far as the production of Silk is concerned.

The total export of Raw Silk for the last two years is as follows:—

1878.	1879.	1878.	1879.
Catties.	*Catties.*	*Kilos.*	*Kilos.*
821,116	935,233	492,670	561,140

These amounts are divided between the following districts, thus:—

DISTRICT.	1878.	1879.	1878.	1879.
	Catties.	*Catties.*	*Kilos.*	*Kilos.*
Tatung-kuan (大東關)	55,517	68,720	33,310	41,232
T'anghsi (塘棲)	42,256	61,756	25,354	37,054
Haich'ang (海昌)	107,153	95,417	64,292	57,250
Chiashih (硤石)	505,876	579,623	303,526	347,774
Kênshan-mên (艮山門)	110,314	129,717	66,188	77,830
TOTAL.....	821,116	935,233	492,670	561,140

It is satisfactory to notice that the excess of 114,117 catties, or 68,470 kilogrammes, in favour of last year, indicates that this industry is gradually increasing throughout the country.

Hangchou, well known by Chinese as producing the best kinds of Silk Piece Goods, has lost some of its reputation since the occupation of that district by the rebels. For all that, this city is the only place in the part of the provinces of Chiangsu and Chêhchiang that I passed through which manufactures two kinds of Damask, called by Chinese Hsienchou (線縐) and Ningch'ou (甯綢). The difference between the two is that the former is dearer, owing to the Silk used for the organzine being more twisted than that used in the latter, and consequently it is thicker and heavier. Besides these special kinds, Hangchou has the advantage over Suchou of manufacturing Crape of a superior quality.

As at Suchou, there are workmen who are weavers by profession, and who are specially employed by the owners of looms in weaving Satin and Damask only. All the other kinds of Silk Piece Goods are woven by country people. The pay of the former is about the same as at Suchou, and the latter as at Huchou.

The general working of the looms is much the same as in the above-named cities, but three men are required to weave Damask: one sits at the top of the loom and pulls the strings, another in the middle to put the threads in order, and the third does the weaving.

Statistics prepared at the Treasurer's office, and information collected from merchants and manufacturers, show that the actual number of looms established in and out of the city is 3,000, with a yearly production of 71,650 pieces. The average weight of each piece being 38.50 taels, gives $71{,}650 \times 38.50 = \frac{2{,}758{,}525}{16}$ taels = 172,408 catties, or 103,445 kilogrammes, and, adding 35 per cent. for average loss in the preparation of the Silk, gives a total of 232,750 catties, or 139,650 kilogrammes, representing about the amount of Raw Silk manufactured locally.

Each piece of manufactured Silk on being exported from the district pays a likin duty of *Tls.* 0.45, or 2.92 francs. There is no tax on looms even in the city.

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From Hangchou I proceeded to Shaohsing, where the officials, as usual, showed themselves very willing to assist me, and gave me the total of the Silk produced in their department, arranged by districts and divided as follows:—

DISTRICT.	1878.	1879.	1878.	1879.
	Catties.	*Catties.*	*Kilos.*	*Kilos.*
Shaohsing (紹興)	37,736	56,076	22,642	33,646
Chuchi (諸暨)	23,730	78,378	14,238	47,027
Hsinch'ang (新昌)	1,868	2,380	1,121	1,428
Ch'eng-hsien (嵊縣)	60,334	32,681	36,201	19,608
Haopa (蒿壩)	368	1,427	221	856
Lingp'u (臨浦)	3,839	16,563	2,303	9,938
Yüyao (餘姚)	3,788	7,924	2,273	4,754
TOTAL	131,663	195,429	78,999	117,257

There are in the city and neighbourhood of Shaohsing about 1,600 looms.

The yearly production of manufactured Silk Piece Goods in this district amounts to 32,500 pieces of different kinds, averaging in weight 15.40 taels; that gives $32,500 \times 15.40 = \frac{500,500}{16}$ taels = 31,281 catties, or 18,769 kilogrammes, and, adding to this the ordinary average loss in the preparation, we have a total of 42,229 catties, or 25,337 kilogrammes, representing the quantity of Raw Silk manufactured locally.

The greatest portion of Silk Piece Goods produced at Shaohsing is a kind of plain Silk, lighter than Crape, called Fangch'ou (紡綢), which is principally worn in summer. Satin is also manufactured, but the quantity is trifling. The working of the looms and the salaries paid to the weavers are about the same as in other places.

Ningpo was the last department of Chêhchiang producing Silk and manufacturing Silk Piece Goods that I visited. The amount of fine Raw Silk produced for the last two years is as follows:—

1878.	1879.	1878.	1879.
Catties.	*Catties.*	*Kilos.*	*Kilos.*
3,254	5,233	1,952	3,140

There are in the city and in the neighbourhood about 848 looms, manufacturing annually some 8,400 pieces of Silk. Of these looms a few are employed all the year round, but the majority work during the three summer months only. 43 taels being the average weight for each piece, we have $8,400 \times 43 = \frac{361,200}{16}$ taels = 22,575 catties, or 13,545 kilogrammes. In this case, as a certain amount of these goods is manufactured out of the raw material, the average loss in preparing the Silk is reduced to 20 per cent., showing a total of 27,090 catties, or 16,254 kilogrammes.

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Among the Silk Piece Goods produced in Ningpo, there are plain Satins, Damasks, Crape goods (in small quantities), and plain Gauze, called T'ussŭ-ch'ou (土絲綢).

Shanghai itself, the emporium for nearly all the Silk for exportation produced in the Empire of China, with the exception of Canton, produces scarcely any Silk.

Young mulberry trees have been planted in different directions, and it is hoped that the country people, following the example of the inhabitants of other districts, will continue to increase their number, and thus in course of time make Shanghai a Silk-producing district.

Whilst the manufacturing cities were in the hands of the rebels, some of the workmen at those places brought their looms to Shanghai, but after the restoration of peace most of them returned to their homes, and at present there are in and around the city itself only about 80 looms, in the hands of Nanching men, manufacturing plain Satins of inferior qualities.

A kind of black Satin, specially made for the Japan market (*see* Catalogue, sample No. 45), is a recent industry. Each piece is divided into three parts, and each part is also divided into three strips of 1 foot broad and 12 feet, or 4.20 mètres, long, which are used as sashes by Japanese ladies. A good hand weaves from 4 to 5 feet of this black Satin a day, and receives $1.20 per piece of 36 feet, or 12.60 mètres, long; he is besides boarded by his employer.

The production of this Satin, which is used only by the Japanese, is very irregular. Last year the number of pieces produced and exported was about 1,150, but as a rule proprietors of looms wait for orders, and do not manufacture in advance.

There are about 25 looms engaged in this kind of work, and when orders are important, weavers work a part of the night as well as during the day.

The other kinds of Satin are of very inferior quality, and only used in the manufacture of boots, shoes, hats, caps, etc. As the larger portion of the Ribbon samples in the Catalogue come from Shanghai, I have omitted to mention this industry in the course of my Report, in speaking of the cities I visited, in order to include them under this heading—this particular work being the same in the various districts.

Ribbons are generally woven by women, young girls, boys, and old men. The organzine, as a rule, is mounted by the head workmen, and arranged according to the design required. There is a great variety of kinds and colours, and manufacturers have assured me that they can reproduce all kinds of Chinese patterns. Each family engaged in this work has from three to five looms; the price of each loom is from $2.25 to $3. The number of families manufacturing Ribbons in and around the city is estimated at 120.

The Silk for both industries, Satin and Ribbons, comes from Huchou and Haining, and has been included in the production given for these two places.

As in the other cities, it is impossible to ascertain the yearly production of Ribbons, the industry being irregular and for local consumption only. Besides the Silk Piece Goods manufactured for trade purposes, there are within the districts visited by me two cities—Suchou in Chiangsu, and Hangchou in Chêhchiang—which manufacture goods for the Imperial Court.

At Suchou 240 looms, and at Hangchou 122 looms, are specially devoted to that purpose, the number of workmen employed being 300 at Suchou, and 220 at Hangchou, each receiving an average of *Tls.* 4 monthly, and being allowed, after the completion of orders

SILK.

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from Peking, to employ their spare time in executing private orders; but they must at all times hold themselves at the disposal of the officials. It happens occasionally that orders from the Court have to be executed without delay, and weavers, etc., work night and day. There is no regular quantity produced, and no one but the official appointed to superintend that special work knows the number of pieces manufactured.

In conclusion, the production of Raw Silk in the province of Chiangsu, Suchou district, is as under:—

DESCRIPTION.	1878.	1879.	1878.	1879.
	Catties.	*Catties.*	*Kilos.*	*Kilos.*
Silk, Fine Raw (sent out of the district).....	355,350	392,840	213,210	235,704
„ employed locally in manufactures	840,618	860,453	504,371	516,272
TOTAL.....	1,195,968	1,253,293	717,581	751,976

being an increase during the year of 57,325 catties, or 34,395 kilogrammes, over 1878.

In the province of Chêhchiang the production for the last two years has been:—

DESCRIPTION.	1878.	1879.	1878.	1879.
	Catties.	*Catties.*	*Kilos.*	*Kilos.*
Silk, Raw Fine (sent out of the district).....	4,659,257	5,293,259	2,795,554	3,175,955
„ employed locally in manufactures	733,019	733,019	439,811	439,811
TOTAL.....	5,392,276	6,026,278	3,235,365	3,615,766

which shows the enormous excess of 634,002 catties, or 380,401 kilogrammes, in favour of 1879.

Before closing this Report, I have to state that the general opinion among the officials with whom I came in contact is that the statistics which they furnished me are from 15 to 25 per cent. below the real quantity of Silk produced. It is known that since the establishment of Likin Offices the country people and merchants are in the habit of declaring less Silk than they actually sell; this custom is the same throughout the Empire. In order, therefore, to come as near as possible to the total production, I have thought it advisable to add 15 per cent. to the quantity of fine Raw Silk produced in each district, as represented by the local statistics. For all that, I feel convinced that I am still under the mark.

With regard to the loss in weight in the preparation of Raw Silk for manufacturing purposes, this item has been included in the average of each producing centre. The figures given above represent as nearly as possible the real quantity of Raw Silk used in the manufacture of the various kinds of Silk Piece Goods.

The facts and figures given in the preceding pages, together with the general improvement they show, compared with the production of previous years, justify the opinion that the Silk industry in general has considerably improved. The people, awakening to the fact that it is in

their interest to increase the development of this already important trade, are extending the plantations of mulberry trees; and should the country continue to enjoy peace, and no epidemic arise among the silkworms, the next few years will witness a considerable augmentation over the present production.

EXPORT of SILK from SHANGHAI during the Years 1875 to 1879.

YEAR.	RAW.	YELLOW.	WILD RAW.	COCOONS.
	Bales.	*Bales.*	*Bales.*	*Bales.*
1875	67,430	1,570	210	1,755
1876	68,898	3,977	1,274	1,219
1877	48,108	3,304	574	1,229
1878	57,425	4,116	833	738
1879	64,045	6,711	466	999

I have, etc.,

E. ROCHER,
4th Assistant, A.

SILK.

SHANGHAI.

ENCLOSURE

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
1	1	Satin, figured, grey	淺灰五葫花緞	Suchou-fu
2	2	„ striped, lake	湖色蜾球羅緞	„
3	3	„ figured, blue and lilac	品藍雪青蜾球花緞	„
4	4	„ „ snow white	雪白洋蓮幕本緞	„
5	5	„ „ five colours	五彩十景花緞	„
6	6	„ „ light straw	淡米梅蜾花緞	„
7	7	„ „ slate	淺灰球蜾花緞	„
8	8	„ „ white ashes	白灰洋蓮花緞	„
9	9	„ „ brown	醬色如意元緞	„
10	10	„ „ pale pink	淡妃洋蓮幕本緞	„
11	11	„ „ lavender	紅雪青巾琴緞	„
12	12	„ „ peach	銀灰三元鶴緞	„
13	13	„ „ old copper	古銅云吉花緞	„
14	14	„ „ purple	青灰蜾球花緞	„
15	15	„ „ white and green	白綠雲蝶皮球幕本緞	„
16	16	„ „ lavender	雪青鶴球羅緞	„
17	17	„ „ sky blue	青湖蓮鶴幕本緞	„
18	18	„ „ violet	青紅蓮鶴幕本緞	„
19	19	„ „ red	棗如意緞	„
20	20	„ „ violet	青紅杏燕桃幕本緞	„
21	21	„ „ aniline red	品福葵蝶龍花緞	„
22	22	„ „ „ blue	紅月雲花緞	„
23	23	„ „ straw	米色灰花緞	„
24	24	„ „ blue ashes	竹灰色花緞	„
25	25	„ „ straw	蜜色藍花緞	„
26	26	„ „ dark blue	二藍花緞	„
27	27	„ „ „	二藍花緞	„
28	28	„ „ scarlet	眞大紅蝶球緞	„
29	29	„ „ tea green	茶青花緞	„
30	30	„ „ violet and white	青蓮雪白花緞	„
31	31	„ „ dark blue	二藍花緞	„
32	32	„ „ slate	淺灰花緞	„

No. 2.

SPECIMENS OF SILK AND SILK PIECE GOODS.

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
Clothing of both sexes	50	1,750	48	1,872	21	136.50
" "	50	1,750	42	1,638	25	162.50
" "	50	1,750	40	1,560	25	162.50
" "	50	1,750	36	1,404	21	136.50
To make counterpanes, quilts, etc.	50	1,750	35	1,365	25	162.50
Clothing of both sexes	50	1,750	47	1,833	21	136.50
" "	50	1,750	46	1,794	21	136.50
" "	50	1,750	42	1,638	21	136.50
" "	50	1,750	47	1,833	21	136.50
" "	50	1,750	45	1,755	21	136.50
" "	50	1,750	37½	1,462	21	136.50
" "	50	1,750	48	1,872	21	136.50
" "	50	1,750	50	1,950	21	136.50
" "	50	1,750	44	1,716	21	136.50
" "	50	1,750	40	1,560	23	149.50
" "	50	1,750	45	1,755	23.50	151
" "	50	1,750	42	1,638	23.50	151
" "	50	1,750	42	1,638	22	143
" "	50	1,750	45	1,755	21	136.50
" "	50	1,750	41	1,599	22	143
" "	50	1,750	42	1,638	22	143
" "	50	1,750	41	1,599	21	136.50
" "	50	1,750	42	1,638	21	136.50
" "	50	1,750	42	1,638	20	130
" "	50	1,750	36	1,404	20	130
" "	50	1,750	46	1,794	20	130
" "	50	1,750	32	1,280	20	130
" "	50	1,750	45	1,755	30.50	198.25
" "	50	1,750	41	1,599	20	130
" "	50	1,750	35	1,365	20	130
" "	50	1,750	48	1,872	20	130
" "	50	1,750	45	1,755	20	130

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
33	33	Satin, figured, light brown	鼻烟花緞	Suchou-fu
34	34	„ „ aniline blue	品月花緞	„
35	35	„ „ scarlet	大紅雲緞	„
36	36	„ „ blue	竹灰梅球摹本緞	„
37	37	„ „ „	月白雲鶴摹本緞	„
38	38	„ plain, brown	天青二八貢緞	„
39	39	„ „ black	元青貢緞	„
40	40	„ „ slate	竹灰素緞	„
41	41	„ „ pale grey	水灰球鶴庫緞	Hangchou-fu
42	42	„ „ black	元色貢緞	Shanghai
43	43	„ „ „	元色次緞	„
44	44	„ „ „	元色青緞	„
45	45	„ „ „	元東洋緞	„
46	46	„ „ blue	二藍素緞	„
47	1	Damask, dark blue	二藍松鶴線縐	Suchou-fu
48	2	„ peach	白灰雲鶴線縐	„
49	3	„ scarlet	大紅梅蝶線縐	Hangchou-fu
50	4	„ blue and pink	脂青梅蝶線縐	„
51	5	„ violet and pink	脂青梅蘭線縐	„
52	6	„ dark blue	三藍雲鶴線縐	„
53	7	„ blue	三藍八吉線縐	„
54	8	„ pink and blue	脂青鶴桃線縐	„
55	9	„ blue	三藍福桃線縐	„
56	10	„ dark blue	三藍福壽線縐	„
57	11	„ graphite black	庫灰錦琴線縐	„
58	12	„ blue	三藍雲蝶線縐	„
59	13	„ scarlet	大紅梅菊線縐	„
60	14	„ blue	二藍龍光線縐	„
61	15	„ violet and white	青蓮白蝠甯綢	Suchou-fu
62	16	„ brown	醬色古錢甯綢	Hangchou-fu
63	17	„ blue	二藍蘭花甯綢	„
64	18	„ aniline blue	品藍福桃甯綢	„
65	19	„ pale grey	淺灰福壽甯綢	„
66	20	„ water blue	蛋青蘭蝶甯綢	„
67	21	„ dark slate	洋灰福桃甯綢	„
68	22	„ aniline blue	品月寸蘭甯綢	„
69	23	„ gold yellow	金駝連元甯綢	„

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
Clothing of both sexes	50	1,750	41	1,599	20	130
" "	50	1,750	42	1,638	21	136.50
" "	50	1,750	35	1,365	17	110.50
" "	50	1,750	41	1,599	20	130
" "	50	1,750	40	1,560	20	130
" "	50	1,750	38	1,482	21.40	139.10
" "	36	1,250	62	2,418	16.20	105.30
" "	50	1,750	40	1,560	20.50	133.25
" "	50	1,750	57	2,223	40	260
" "	36	1,260	60	2,340	21	136.50
For boots, shoes, and caps	36	1,260	45	1,755	14	91
Clothing of both sexes	38	1,330	45	1,755	14	91
By Japanese as sashes	36	12.60	52	2,028	14.50	94.25
Clothing of both sexes	36	12.60	25	875	16.20	105.30
" "	50	1,750	34	1,326	18	117
" "	50	1,750	30	1,170	18	117
" "	48	1,680	33	1,287	30	195
" "	50	1,750	35	1,365	14.60	94.90
" "	50	1,750	36½	1,423	14.60	94.90
" "	50	1,750	27½	1,072	14.60	94.90
" "	50	1,750	38	1,481	14.60	94.90
" "	50	1,750	36	1,404	14.60	94.90
" "	50	1,750	35	1,365	14.60	94.90
" "	50	1,750	32	1,248	20	130
" "	50	1,750	40	1,560	14.60	94.90
" "	50	1,750	36	1,404	14.60	94.90
" "	50	1,750	31	1,209	14.18	96.20
" "	22	770	16½	643½	...	...
" "	50	1,750	44	1,716	26	151
" "	50	1,750	47	1,833	22	143
" "	50	1,750	47	1,833	22	143
" "	50	1,750	45	1,755	23	149.50
" "	50	1,750	50	1,950	22	143
" "	50	1,750	48	1,872	22	143
" "	50	1,750	45	1,755	22	143
" "	50	1,750	46	1,794	23	149.50
" "	50	1,750	45	1,755	22	143

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
70	24	Damask, peach	銀灰仙球甯綢	Hangchou-fu
71	25	„ old copper	正駝五葫甯綢	„
72	26	„ light blue	竹青梅花甯綢	„
73	27	„ metropolis brown	醬色芙蓉甯綢	„
74	28	„ peach red	桃紅梅蝶甯綢	„
75	29	„ pink	妃色杏燕甯綢	„
76	30	„ blue	二藍蝶蘭甯綢	„
77	31	„ „	二藍芙蓉梅桃甯綢	„
78	32	„ aniline blue	品藍魚樵耕讀甯綢	„
79	33	„ dark blue	二藍四合如意甯綢	„
80	34	„ „	二藍四合甯綢	„
81	35	„ straw	米色蘭花甯綢	„
82	1	Taffeta, brown	醬色純素甯綢	„
83	2	„ scarlet	大紅純素甯綢	Suchou-fu
84	1	Crape, plain, white	雪白素湖縐	Huchou-fu
85	2	„ „ scarlet	品紅素湖縐	„
86	3	„ figured, pink	洋青綉毬湖縐	„
87	4	„ „ scarlet	大紅花湖縐	„
88	5	„ „ light red	魚紅子元湖縐	„
89	6	„ „ orange	珠金婕元湖縐	„
90	7	„ „ peach	銀灰琴巾湖縐	„
91	8	„ „ aniline blue	品月巧鶴湖縐	„
92	9	„ „ slate	竹灰六合湖縐	„
93	10	„ „ dark slate	青灰蘭花湖縐	„
94	11	„ „ light green	淺茶如意湖縐	„
95	12	„ „ blue	湖色花湖縐	„
96	13	„ „ white	白子壽湖縐	„
97	14	„ „ black	元色吉壽湖縐	„
98	15	„ „ aniline blue	品月桂花湖縐	„
99	16	„ „ blue	月白芝藤湖縐	„
100	17	„ „ snow white	雪白方巾湖縐	„
101	18	„ „ pink	紅灰連元湖縐	„
102	19	„ „ black	元色雲蝠湖縐	„
103	20	„ „ blue	翠藍連元湖縐	„
104	21	„ „ „	西湖蝠壽湖縐	„
105	22	„ „ snow white	本色桃鶴湖縐	„
106	23	„ „ black	元色雲吉湖縐	„

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
Clothing of both sexes	50	1,750	47	1,833	20	130
,, ,,	50	1,750	47	1,833	20	130
,, ,,	50	1,750	47	1,833	20	130
,, ,,	50	1,750	48	1,872	20	130
,, ,,	50	1,750	48	1,872	20	130
,, ,,	50	1,750	50	1,950	20	130
,, ,,	50	1,750	32	1,248	20	130
,, ,,	50	1,750	47½	1,852	20	130
,, ,,	50	1,750	47½	1,852	20	130
,, ,,	50	1,750	50	1,950	20	130
,, ,,	50	1,750	48	1,872	20	130
,, ,,	16	560	15	585	7.20	46.80
,, ,,	50	1,750	44	1,716	22	143
,, ,,	50	1,750	93	3,627	30	195
,, ,,	48	1,680	33	1,287	11.70	76.05
,, ,,	46	1,610	26	1,014	11	71.50
,, ,,	46	1,610	24	936	11.30	73.45
,, ,,	46	1,610	25	975	10.95	71.17
,, ,,	46	1,610	23	897	10.20	66.30
,, ,,	46	1,610	24	936	10.20	66.30
,, ,,	46	1,610	28	1,097	9.80	63.70
,, ,,	46	1,610	25	975	9.80	63.70
,, ,,	46	1,610	25	975	9.50	61.75
,, ,,	46	1,610	26	1,014	9.50	61.75
,, ,,	46	1,610	23	897	9.50	61.75
,, ,,	46	1,610	26	1,014	9.50	61.75
,, ,,	46	1,610	28	1,092	9.50	61.75
,, ,,	46	1,610	30	1,170	9.50	61.75
,, ,,	48	1,680	26	1,014	9	58.50
,, ,,	48	1,680	26	1,014	9	58.50
,, ,,	48	1,680	26	1,014	9	58.50
,, ,,	48	1,680	26	1,014	9	58.50
,, ,,	48	1,680	26	1,014	9	58.50
,, ,,	48	1,680	26	1,014	9	58.50
,, ,,	48	1,680	26	1,014	9	58.50

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
107	24	Crape, figured, blue	淺藍三多湖縐	Huchou-fu.
108	25	„ „ „	二藍通球湖縐	„
109	26	„ „ aniline red	瑰紫蝶元湖縐	„
110	27	„ „ lily red	粉荷花鶴湖縐	„
111	28	„ „ blue	深藍雲龍湖縐	„
112	29	„ „ light blue	玉色蝠鶴湖縐	„
113	30	„ „ white	本色連元湖縐	„
114	31	„ „ yellow	蜜色連元湖縐	„
115	32	„ „ dark slate	月灰六丹湖縐	„
116	33	„ „ light violet	脂青如意元湖縐	„
117	34	„ „ blue	三藍四友湖縐	„
118	35	„ „ scarlet	大紅梅元花綢	„
119	36	„ „ aniline blue	品藍如意花綢	„
120	37	„ „ light orange	珠金八仙線春	Hangchow-fu
121	1	Gauze, figured, gold and black	佛青花板金	Soochow-fu
122	2	„ „ dark blue	二藍子鶴花紗	Ta I-t'ing (大宜亭) district of Suchou-fu.
123	3	„ „ white ashes	白灰子鶴花紗	„ „
124	4	„ „ snow white	雪白雲紗	„ „
125	5	„ „ blue	湖色子鶴西紗	„ „
126	6	„ „ „	品藍梅蜨球紗	„ „
127	7	„ „ dark lake	湖色雲吉西紗	„ „
128	8	„ „ rose	洋青杏燕西紗	„ „
129	9	„ „ blue	湖色梅球西紗	„ „
130	10	„ „ peach	銀灰芝蘇紗	„ „
131	11	„ „ white	雪白萬字亮紗	„ „
132	12	„ „ white and blue	雪青羅通紗	Shêngtsê (盛澤) district of Suchou-fu ....
133	13	„ „ blue and white	雪青米通紗	„ „
134	14	„ „ slate and white	雪青八吉紗	„ „
135	15	„ „ black	元色牡丹線綾	„ „
136	16	„ „ straw	蜜色雲鶴花紗	„ „
137	17	„ „ blue	西湖杏燕花紗	„ „
138	18	„ „ „	西湖蘭蝶花紗	„ „
139	19	„ „ snow white	雪白梅花紗	„ „
140	20	„ striped, black and white	雪青金銀羅	„ „
141	21	„ „ snow white	白秋羅	„ „

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
Clothing of both sexes	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	26	1,014	9	58.50
" "	48	1,680	36	1,014	9	58.50
" "	46	1,610	12	468	5.50	35.75
" "	36	1,260	11½	448	3.80	24.70
" "	36	1,260	34	1,326	13.30	85.40
For binding the summer dresses of Chinese officials	20	700	14	546	13	84.50
Clothing of both sexes, principally for summer dresses	50	1,750	25	975	16.50	107.25
" " "	50	1,750	27	1,053	16.50	107.90
" " "	50	1,750	34	1,326	14.50	94.25
" " "	50	1,750	25	975	14	91
" " "	50	1,750	26	1,014	14	91
" " "	50	1,750	25	975	14	91
" " "	50	1,750	27	1,053	14	91
" " "	50	1,750	26	1,014	14	91
" " "	50	1,750	24	936	14	91
" " "	50	1,750	23	897	9.50	61.75
" " "	42	1,470	19	741	6.70	43.55
" " "	42	1,470	17½	682	6.40	41.60
" " "	44	1,540	13.20	514	5.60	36.40
" " "	46	1,610	15	585	5.20	33.80
" " "	42	1,470	24½	955	5	32.50
" " "	42	1,470	16	624	5	32.50
" " "	42	1,470	15	585	5	32.50
" " "	42	1,470	11	429	4.50	29.25
" " "	42	1,470	13½	526	5	32.50
" " "	32	1,120	7	273	3	19.50

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
142	22	Gauze, striped, white	本白五絲生羅	Shêngtsê (盛澤) district of Suchou-fu
143	23	„ „ black and white	雪青羅紗	„ „
144	24	„ „ white	雪白銀羅	„ „
145	25	„ plain, aniline blue	品月素紗	„ „
146	26	„ „ slate	雪青熟紗	„ „
147	27	„ „ white	本白生絲紗	„ „
148	28	„ „ pale azure	淡雪青杭紗	Hangchou-fu
149	29	„ „ light pink	妃紆杭紗	„
150	30	„ figured, lake blue	湖色蜾球春紗	„
151	31	„ „ scarlet	大紅如意花羅	„
152	32	„ „ light blue	湖綠四合如意杭羅	„
153	33	„ „ blue	湖色如意皮球杭羅	„
154	34	„ „ „	月白梅蝶杭羅	„
155	35	„ „ „	湖色福鶴杭羅	„
156	36	„ „ white	本色百福杭羅	„
157	37	„ „ „	本色福壽杭羅	„
158	38	„ „ blue	月白杏燕杭羅	„
159	39	„ „ white	本色連元杭羅	„
160	40	„ „ light blue	月白雲鶴杭羅	„
161	41	„ „ blue	二元藍雲杏燕杭羅	„
162	42	„ „ black	元湖青色杏純素杭羅	„
163	43	„ striped, blue	湖雪色白純羅紋紡	„
164	44	„ „ white	雪白白三絲羅	„
165	45	„ „ „	雪妃色巾羅	„
166	46	„ „ blue and white	妃土絲紗	„
167	47	„ plain, white	土絲紗	Ningpo-fu
168	48	„ „ „	細土絲紗	„
169	1	Crape, figured, blue	三藍球蜾線綾	Shêngtsê (盛澤) district of Suchou-fu
170	2	„ „ pink	妃色皮球庄院	„ „
171	3	„ „ snow white	雪白梅球庄院	„ „
172	4	„ „ black	元色方巾庄院	„ „
173	5	„ „ red	桃紅杏鶴庄院	„ „
174	6	„ „ orange yellow	杏黃雲鶴八吉庄院	„ „
175	7	„ „ orange	杏黃球鶴庄院	„ „
176	8	„ „ blue	西湖皮球庄院	„ „
177	9	„ „ dark blue	三藍百福庄院	„ „

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
Clothing of both sexes, principally for summer dresses	44	1,540	16	624	5.20	33.80
" " "	42	1,470	16.80	655	6.70	43.55
" " "	42	1,470	14½	565	5	32.50
" " "	50	1,750	26	1,014	14.60	94.90
Clothing of both sexes	42	1,470	13½	526	6.70	43.55
" "	42	1,470	13	507	6.70	43.55
" "	50	1,750	35	1,365	12.50	81.25
" "	50	1,750	34	1,426	13	84.50
" "	36	1,260	28	1,092	15.40	100.10
" "	43	1,505	30	1,170	15.90	103.35
" "	42	1,470	27	1,053	8.80	57.20
" "	42	1,470	27	1,053	8.80	57.20
" "	42	1,470	30	1,170	8.80	57.20
" "	42	1,470	31	1,229	8.80	57.20
" "	42	1,470	31	1,229	8.80	57.20
" "	42	1,470	30	1,170	8.80	57.20
" "	42	1,470	26	1,014	8.80	57.20
" "	42	1,470	30	1,170	8.80	57.20
" "	42	1,470	28	1,092	8.80	57.20
" "	42	1,470	40	1,560	8.80	57.20
" "	42	1,470	28	1,092	8.80	57.20
" "	43	1,505	30	1,170	9.90	64.35
" "	43	1,505	27	1,053	12.50	81.25
" "	48	1,680	21	819	11.50	74.75
" "	50	1,750	28	1,092	12.50	81.25
" "	50	1,750	28	1,092	12.50	81.25
" "	100	3,500	25	975	6	39
" "	100	3,500	7½	1,365	7.50	48.75
For lining	46	1,610	15	585	5.20	33.80
"	36	1,260	7	273	2.60	16.90
"	46	1,610	15	585	4	26
"	46	1,610	15	585	4	26
"	46	1,610	20	780	7.70	50
"	36	1,260	7	273	2.60	16.90
"	36	1,260	7	273	2.60	16.90
"	48	1,680	15	585	7.40	48.10
"	48	1,680	15	585	7.40	48.10

SILK.

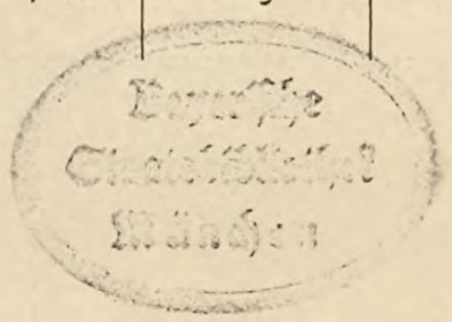
SHANGHAI.

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
178	10	Crape, figured, green	葵綠杏燕庄院	Shêngtsê (盛澤) district of Suchou-fu
179	11	„ „ scarlet	大紅皮球庄院	„ „
180	12	„ „ „	大紅如意庄院	„ „
181	13	„ plain, slate	雪青紡綢	„ „
182	14	Silk, figured, green	葵綠菊花絹	„ „
183	15	„ „ violet	青蓮八吉絹	„ „
184	16	„ „ yellow	菊黃花絹	„ „
185	17	„ „ dark blue	佛青蘭菊花絹	„ „
186	18	„ plain, orange yellow	杏黃板綾	„ „
187	19	„ „ yellow	正黃素綢	„ „
188	20	„ „ black blue	佛青雙仝	„ „
189	21	„ „ blue	西湖素綢	„ „
190	22	„ „ jade blue	玉色板綾	„ „
191	23	„ „ orange yellow	杏黃衣絹	„ „
192	24	„ „ scarlet	大紅板綾	„ „
193	25	„ „ yellow	杏黃西綾	„ „
194	26	„ „ blue	湖色西綾	„ „
195	27	„ „ light blue	月白紡綢	Shaohsing-fu
196	28	„ „ „	月白川紡	„
197	29	„ „ green	洋綠土絲綢	„
198	30	„ „ yellow	洋黃土絲綢	„
199	31	„ „ red	洋紅土絲綢	„
200	1	„ refuse, plain, violet	青蓮棉綢	Huchou-fu
201	2	„ „ „ scarlet	大紅棉綢	„
202	3	„ „ „ green	葵綠棉綢	„
203	4	„ „ „ aniline red	彩色棉綢	„
204	5	„ „ „ blue	三藍棉綢	„
205	6	„ „ white	粗棉綢	„
206	1	Lampas, mixed colours	五彩六角錦	Suchou-fu
207	2	„ „	米色八吉錦緞	„
208	3	„ „	鮮紅菊花錦緞	„
209	4	„ „	鵝黃龍鳳錦緞	„
210	5	„ „	天青五彩錦緞	„
211	6	„ „	品月牡丹錦緞	„
212	7	„ gold and brown	天青絲夾金錦	„
213	8	„ gold, mixed colours	洋綠片金錦緞	„

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
For lining	36	1,260	7	273	2.60	16.90
„	42	1,470	12	468	9.20	59.80
„	42	1,470	12	468	9.20	59.80
„	42	1,470	16	624	12.50	81.25
„	32	1,120	6	234	1.40	9.10
„	32	1,120	4½	175	1.60	10.40
„	16	560	2	78	0.65	4.22
„	18	630	4	156	1.05	6.82
„	32	1,120	6	234	3.40	22.10
„	32	1,120	8½	331	3	19.50
„	16	560	2	78	0.65	4.22
„	32	1,120	6	234	1.70	11.05
„	32	1,120	5	195	2.50	16.25
„	32	1,120	3	117	1.40	9.10
„	32	1,120	6½	253	3.50	22.75
„	32	1,120	5½	214	3	19.50
„	32	1,120	5½	214	3	19.50
„	42	1,470	18	702	5.20	33.80
„	42	1,470	8½	331	3	19.50
„	45	1,570	17	663	4	26
„	45	1,570	17	663	4	26
„	45	1,570	17	663	4	26
For underclothing, and to make sheets	65	2,275	36	1,404	9.50	61.75
„ „ „	65	2,275	36	1,404	9.50	61.75
„ „ „	65	2,275	36	1,404	9.50	61.75
„ „ „	65	2,275	36	1,404	9.50	61.75
„ „ „	65	2,275	36	1,404	9.50	61.75
„ „ „	65	2,275	68	2,652	15	32.50
To cover furniture, bind fans, etc.	20	700	20	780	12	78
„ „ „	20	700	23	805	9	58.50
„ „ „	20	700	25	975	6	39
„ „ „	20	700	27	853	6	39
„ „ „	20	700	29	1,131	52	338
As trimming to ladies' cuffs	20	700	9.60	374	40	260
For binding hats and caps	20	700	28	1,092	8.50	55.25
By Coreans to make sashes	20	700	15	585	60	390



CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
214	9	Lampas, gold, mixed colours	綠錦琴錦緞	Suchou-fu
215	10	„ „ „	洋綠五彩錦緞	„
216	11	„ brown and gold	天青雲龍眞金錦緞	„
217	12	„ yellow and gold	鵝黃雲龍眞金錦緞	„
218	13	„ black and gold	二藍純素板金	„
219	14	„ „ „	元緞眞金錦邊	Hangchou-fu
220	1	Binding, mixed colours	五彩織花邊	Suchou-fu
221	2	„ „	元青織素花邊	„
222	1	Silk handkerchiefs, white	白邊絲巾	Shêngtsê (盛澤) district of Suchou-fu
223	2	„ „ „	白邊小號絲巾	„ „
224	3	„ „ blue and white	藍邊小號絲巾	„ „
225	4	„ „ „ „	藍邊大號絲巾	„ „
226	1	Wild Silk, plain, black	元色紗包頭	Shuanglin (雙林) district of Huchou-fu
227	2	„ „ „	元色荷花包頭	„ „
228	1	Silk and cotton mixture, lampas	品藍眞金錦邊	Hangchou-fu
229	2	„ „ „ „	品藍萬字皮球錦緞	Suchou-fu
230	3	„ „ figured, black	玉色三元絲布	Shêngtsê (盛澤) district of Suchou-fu
231	4	„ „ „ violet	雪青梅球絲布	„ „
232	5	„ „ „ blue	玉色百幅絲綢	„ „
233	6	„ „ „ red	木紅雲花絲布	„ „
234	7	„ „ „ slate	雪青雲幅紆布	„ „
235	8	„ „ „ „	雪青雲鶴紆布	„ „
236	9	„ „ „ „	套紅鶴球紆布	„ „
237	10	„ „ „ „	雪青如意紆布	„ „
238	11	„ „ „ „	雪青蜨球紆布	„ „
239	12	„ „ „ „	雪青素絲布	„ „
240	1	Velvets, cotton and Silk, black	黑色建絨	Suchou-fu
241	2	„ „ „ „	金塔倭絨	„
242	3	„ „ „ blue	二藍清水建絨	„
243	4	„ „ „ „	月白建絨	„
244	5	„ light blue	月白清水建絨	„
245	6	„ black	黑色銀塔絨	„
246	7	„ „	黑色金塔建絨	„
247	1	Ribbon, figured, mixed colours	五彩獅蝠旗帶	Shanghai
248	2	„ „ „ „	五彩皮球旗帶	„

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
By Coreans to make sashes	20	700	15	585	60	390
By high officials to cover furniture	20	700	24	936	27	175.50
For binding the dresses of both sexes	20	700	28	1,092	60	390
Specially made for the Imperial Court	20	700	26	1,014	60	390
As binding for summer dresses	20	700	18	630	8.50	55.25
For binding the dresses of officials	20	700	41	1,599	30	123
For binding the dresses of Chinese ladies	...	210	7	245	5	32.50
,, ,, ,,	...	210	$6\frac{1}{2}$	$253\frac{5}{10}$	5	32.50
By Chinese to wipe the face	20	700	$7\frac{2}{10}$	280	2.80	18.20
,, ,,	...	525	5	195	2.40	15.60
,, ,,	...	525	5	195	2.40	15.60
,, ,,	...	700	$7\frac{2}{10}$	280	2.80	18.20
Worn round the head by Chinese ladies	...	1,400	9	351	1.50	9.95
,, ,, ,,	...	98	$1\frac{1}{10}$	$42\frac{9}{10}$	0.18	1.17
For binding Chinese hats and caps	20	700	35	1,527	18	117
,, ,, ,,	20	700	37	1,443	8.50	55.25
Clothing of both sexes	38	1,330	11	429	1.50	9.75
,, ,,	38	1,330	11	429	1.50	9.75
,, ,,	38	1,330	11	429	1.50	9.75
For lining	38	1,330	11	429	1.50	9.75
,,	38	1,330	11	429	1.50	9.75
Clothing of both sexes	38	1,330	$12\frac{1}{2}$	$487\frac{1}{2}$	1.75	11.37
,, ,,	38	1,330	$12\frac{1}{2}$	$487\frac{1}{2}$	1.75	11.37
,, ,,	38	1,330	$12\frac{1}{2}$	$487\frac{1}{2}$	1.75	11.37
,, ,,	38	1,330	$12\frac{1}{2}$	$487\frac{1}{2}$	1.75	11.37
,, ,,	40	1,400	14	546	1.75	11.37
Chiefly to make collars	20	700	50	1,950	17	110.50
,, ,,	28	980	81	3,159	56	364
,, ,,	20	700	36	1,404	17	110.50
,, ,,	20	700	35	1,365	14	91
,, ,,	20	700	37	1,443	17	110.50
,, ,,	20	700	56	2,184	17	110.50
,, ,,	20	700	47	1,833	17	110.50
For binding the dresses of Chinese ladies, trousers, cuffs, etc.	20	700	2.60	101.40	2.60	16.90
,, ,, ,,	20	700	2.60	101.40	2.60	16.90

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
249	3	Ribbon, figured, white ground	白杏燕欄杆	Shanghai .....
250	4	„ „ violet ground	紫色雲鶴	„ .....
251	5	„ „ „ „	青蓮杏燕	„ .....
252	6	„ „ „ „	醬色雲鶴	„ .....
253	7	„ „ white ground.....	白蘭燕	„ .....
254	8	„ „ „ „	白色雲鶴	„ .....
255	9	„ „ „ „	白吉梅	„ .....
256	10	„ „ white.....	白吉花	„ .....
257	11	„ „ white ground.....	白色菊蕙	„ .....
258	12	„ „ „ „	白色蘭桂	„ .....
259	13	„ „ „ „	白色牡丹	„ .....
260	14	„ „ „ „	白色萬蝠	„ .....
261	15	„ „ violet ground	蓮青龍門	„ .....
262	16	„ „ „ „	蓮青梅庄欄杆	„ .....
263	17	„ „ „ „	蓮青雲鶴欄杆	„ .....
264	18	„ „ red ground	脂青杏燕欄杆	„ .....
265	19	„ „ blue ground.....	二藍杏燕欄杆	„ .....
266	20	„ „ aniline blue.....	品藍梅蕙欄杆	„ .....
267	21	„ „ blue ground.....	藍吉慶欄杆	„ .....
268	22	„ „ „ „	品藍雲鶴欄杆	„ .....
269	23	„ „ green ground.....	綠色蕙梅欄杆	„ .....
270	24	„ „ „ „	品綠杏燕欄杆	„ .....
271	25	„ „ light blue.....	蓮青皮球欄杆	„ .....
272	26	„ „ red ground.....	品紅梅花欄杆	„ .....
273	27	„ „ mixed colours	五彩花蕙欄杆	„ .....
274	28	„ „ „ „	五彩鴛鴦欄杆	„ .....
275	29	„ „ black ground	元色萬球欄杆	„ .....
276	30	„ „ pink ground	妃色梅花欄杆	„ .....
277	31	„ „ „ „	妃色吉花欄杆	„ .....
278	32	„ „ violet ground.....	青灰雲鶴欄杆	„ .....
279	33	„ „ mixed colours	五彩水浪欄杆	„ .....
280	34	„ „ „ „	五彩芙蓉欄杆	„ .....
281	35	„ „ yellow ground.....	金黃蕙吉欄杆	„ .....
282	36	„ „ „ „	正黃芙蓉欄杆	„ .....
283	37	„ „ white ground.....	白色杏燕欄杆	„ .....
284	38	„ „ „ „	白色雲蝠欄杆	„ .....

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
For binding the dresses of Chinese ladies, trousers, cuffs, etc.	50	1,750	2.90	113.10	2.20	14.30
" " "	50	1,750	3	117	2	13
" " "	50	1,750	2	78	1.60	10.40
" " "	50	1,750	1.90	74.10	1.10	7.15
" " "	50	1,750	1.76	68.64	1.60	10.40
" " "	50	1,750	1	39	1.20	8.80
" " "	50	1,750	1	39	1	6.50
" " "	50	1,750	1.40	54.60	1	6.50
" " "	50	1,750	1.20	46.80	0.82	5.33
" " "	50	1,750	1.10	42.90	0.82	5.33
" " "	50	1,750	1.10	42.90	0.82	5.33
" " "	50	1,750	1.10	42.90	0.82	5.33
" " "	50	1,750	1.30	50.70	1.30	8.45
" " "	50	1,750	1.30	50.70	1.30	8.45
" " "	50	1,750	1.10	42.90	1.20	7.80
" " "	50	1,750	1.10	42.90	1.10	7.80
" " "	50	1,750	0.90	35.10	0.70	4.55
" " "	50	1,750	1.20	46.80	0.82	5.33
" " "	50	1,750	0.83	32.37	1	6.50
" " "	50	1,750	1.10	42.90	0.82	5.33
" " "	50	1,750	0.87	30.42	0.90	5.85
" " "	50	1,750	1.10	42.90	1.20	7.80
" " "	50	1,750	1.10	42.90	0.82	5.33
" " "	50	1,750	1.30	50.70	1.30	8.45
" " "	50	1,750	1.25	48.75	0.82	5.33
" " "	50	1,750	1.20	46.80	0.82	5.33
" " "	50	1,750	1.10	42.90	0.82	5.33
" " "	50	1,750	0.91	35.49	1	6.50
" " "	50	1,750	0.91	35.49	0.95	6.17
" " "	50	1,750	1	39	0.95	6.17
" " "	50	1,750	1.10	42.90	0.82	5.33
" " "	50	1,750	1.20	46.80	0.82	5.33
" " "	50	1,750	1.20	46.80	0.82	5.33
" " "	50	1,750	1	39	0.82	5.33
" " "	50	1,750	0.75	29.50	0.65	4.22
" " "	50	1,750	0.75	29.50	0.58	3.77

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
285	39	Ribbon, figured, yellow ground	正黃梅欄杆	Shanghai.....
286	40	„ „ „ „	正黃茶花欄杆	„ .....
287	41	„ „ five colours.....	五色水浪欄杆	„ .....
288	42	„ „ plain black.....	元空辦欄杆	„ .....
289	43	„ „ red ground.....	品紅蝶燕欄杆	„ .....
290	44	„ „ blue ground.....	品藍燕梅欄杆	„ .....
291	45	„ „ green ground.....	綠蝶蘭燕欄杆	„ .....
292	46	„ „ red ground.....	品紅蘭桂欄杆	„ .....
293	47	„ „ mixed colours	妃白玫瑰欄杆	„ .....
294	48	„ „ green ground.....	綠椒花欄杆	„ .....
295	49	„ „ gold and colours	金蜨蘭欄杆	„ .....
296	50	„ „ „ „ yellow	金素斗方欄杆	„ .....
297	51	„ „ „ „ „	金素椒地欄杆	„ .....
298	52	„ „ „ „ colours	金雲鶴欄杆	„ .....
299	53	„ „ „ „ „	金萬字皮球欄杆	„ .....
300	54	„ „ „ „ „	金夾彩蝠欄杆	„ .....
301	55	„ „ „ „ „	黃金對燕欄杆	„ .....
302	56	„ „ „ „ „	金牡丹欄杆	„ .....
303	57	„ „ „ „ „	金吉蘭欄杆	„ .....
304	58	„ „ „ „ „	藍彩梅蜨欄杆	„ .....
305	59	„ „ „ „ „	冲金雲鶴欄杆	„ .....
306	60	„ „ „ „ „	冲金杏燕欄杆	„ .....
307	61	„ „ „ „ „	金彩旗花欄杆	„ .....
308	62	„ „ „ „ „	銀妃花鶴欄杆	„ .....
309	63	„ „ „ „ „	金牡丹欄杆	„ .....
310	64	„ „ „ „ „	金花燕欄杆	„ .....
311	65	„ „ „ „ „	金素斗方欄杆	„ .....
312	66	„ „ „ „ yellow	金彩雲鶴欄杆	„ .....
313	67	„ „ „ „ „	冲金雲鶴欄杆	„ .....
314	68	„ „ „ „ „	金雲鶴欄杆	„ .....
315	69	„ „ „ „ „	金夾彩欄杆	„ .....
316	70	„ „ „ „ „	夾彩雲蝠欄杆	„ .....
317	71	„ „ „ mixed colours	三色椒錦欄杆	„ .....
318	72	„ „ „ and red	杭金椒欄杆	„ .....
319	73	„ „ mixed colours.....	黃綠椒欄杆	„ .....
320	74	„ „ „ „	金夾彩燕欄杆	Suchou-fu.....

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
For binding the dresses of Chinese ladies, trousers, cuffs, etc.....	50	1,750	0.80	31.20	0.60	4.80
,, ,, ,,	50	1,750	0.60	23.40	0.40	2.60
,, ,, ,,	50	1,750	1	39	0.82	5.33
,, ,, ,,	50	1,750	0.50	19.50	0.55	3.57
,, ,, ,,	50	1,750	3	117	2	13
,, ,, ,,	50	1,750	2.40	93.60	1.40	9.10
,, ,, ,,	50	1,750	2.40	93.60	1	6.50
,, ,, ,,	50	1,750	0.75	29.25	0.46	2.99
,, ,, ,,	50	1,750	0.80	31.20	0.46	2.99
,, ,, ,,	50	1,750	0.40	15.60	0.18	1.17
,, ,, ,,	50	1,750	1.80	70.20	1.70	11.05
,, ,, ,,	50	1,750	1.80	70.20	1.60	10.40
,, ,, ,,	50	1,750	1.60	62.40	1.60	10.40
,, ,, ,,	50	1,750	2.20	85.80	1.50	9.75
,, ,, ,,	50	1,750	2	78	1.80	11.70
,, ,, ,,	50	1,750	1.20	46.80	1.20	7.80
,, ,, ,,	50	1,750	1.10	42.90	1.20	7.80
,, ,, ,,	50	1,750	1.90	74.10	1.60	10.40
,, ,, ,,	50	1,750	1.80	70.20	1.70	11.05
,, ,, ,,	50	1,750	1.50	58.50	1.80	11.70
,, ,, ,,	50	1,750	1.20	46.80	1.20	8.80
,, ,, ,,	50	1,750	1.10	42.90	1.20	7.80
,, ,, ,,	50	1,750	1.20	46.80	1.70	11
,, ,, ,,	50	1,750	1.50	58.50	1.30	8.45
,, ,, ,,	50	1,750	1	39	1	6.50
,, ,, ,,	50	1,750	0.91	35.49	1	6.50
,, ,, ,,	50	1,750	0.66	25.74	1	6.50
,, ,, ,,	50	1,750	0.90	35.10	0.90	5.85
,, ,, ,,	50	1,750	1	39	0.95	6.17
,, ,, ,,	50	1,750	0.75	29.25	0.65	4.22
,, ,, ,,	50	1,750	0.75	29.25	0.65	4.22
,, ,, ,,	50	1,750	0.75	29.25	0.68	5.42
,, ,, ,,	50	1,750	0.75	29.25	0.65	4.22
,, ,, ,,	50	1,750	0.50	19.50	0.40	2.60
,, ,, ,,	50	1,750	0.75	29.25	0.35	2.27
,, ,, ,,	50	1,750	2.40	93.60	1.40	9.10

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
321	75	Ribbon, figured, green ground	織錦魚樵欄杆	Suchou-fu
322	76	„ „ gold and yellow	金蝶欄杆	„
323	77	„ „ „ „ „	眞金素片欄杆	„
324	78	„ „ „ „ „	眞金素片欄杆	„
325	79	„ „ „ „ colours	眞金綠欄杆	„
326	80	„ „ „ „ „	金蓮如意欄杆	„
327	81	„ „ „ „ „	眞金如意牡丹欄杆	„
328	82	„ „ „ „ „	沖金皮球欄杆	„
329	1	Braid, Silk, black	元色辮子欄杆	Shanghai
330	2	„ „ pink and white	桃紅𠂤字辮欄杆	„
331	3	„ „ figured and coloured	各色桂花欄杆	„
332	4	„ „ pearl, mixed colours	五色珠欄杆	„
333	5	„ „ plain, mixed colours	各色七股欄杆	„
334	6	„ „ figured, blue and white	藍羅甸欄杆	„
335	7	„ „ „ mixed colours	五彩羅甸欄杆	„
336	8	„ „ „ pink and silver	金紅十三欄杆	„
337	9	„ „ „ gold	洋金十三欄杆	„
338	10	„ „ „ gold and colours	金綠桂花欄杆	„
339	11	„ „ „ „ „ red	金紅鴛鴦欄杆	„
340	12	„ „ „ „ „ blue	金紅人字欄杆	„
341	13	„ „ „ „ „ green	金綠人字欄杆	„
342	14	„ „ „ scarlet	品紅桂花欄杆	Suchou-fu
343	15	„ „ „ blue ground	品藍桂花欄杆	„
344	1	Garter, Silk, plain, scarlet	大紅脚帶	Shanghai
345	2	„ „ „ aniline blue	品藍脚	„
346	3	„ „ „ „ red	品紅脚	„
347	4	„ „ „ green	品綠脚	„
348	5	„ „ striped, mixed colours	五色杆花脚	„
349	6	„ „ „ „ „	黃綠花脚帶	„
350	7	„ „ „ „ „	藍白花脚	„
351	8	„ „ „ „ „	紅白雙合脚	„
352	9	„ „ „ „ „	五色紅心脚	„
353	10	„ „ „ „ „	五色杆花脚	„
354	11	„ „ plain, green	品綠脚	„
355	12	„ „ „ red	大紅鬚	„
356	13	„ „ „ green	茶色女脚	„

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
For binding the dresses of Chinese ladies, trousers, cuffs, etc.....	50	1,750	4.50	175.50	3.90	25.35
,, ,, ,,	50	1,750	2.10	81.90	1.35	8.77
,, ,, ,,	50	1,750	1.50	58.50	1.90	12.35
,, ,, ,,	50	1,750	0.75	29.25	1	6.50
,, ,, ,,	50	1,750	0.40	15.60	0.35	1.37
,, ,, ,,	50	1,750	2.10	81.90	1.35	8.77
,, ,, ,,	50	1,750	0.55	21.45	1	6.50
,, ,, ,,	50	1,750	0.75	21.45	0.55	3.57
,, ,, ,,	50	1,750	1.50	58.50	0.55	3.57
,, ,, ,,	50	1,750	0.40	15.60	0.40	2.60
,, ,, ,,	50	1,750	0.70	27.30	0.48	3.12
,, ,, ,,	50	1,750	0.30	11.70	0.27	1.75
,, ,, ,,	50	1,750	0.31	12.09	0.27	1.75
,, ,, ,,	50	1,750	0.50	19.50	0.35	2.97
,, ,, ,,	50	1,750	0.40	15.60	0.40	2.60
,, ,, ,,	50	1,750	0.55	21.45	0.50	3.25
,, ,, ,,	50	1,750	0.50	19.50	0.50	3.25
,, ,, ,,	50	1,750	0.55	21.45	0.80	5.20
,, ,, ,,	50	1,750	0.50	19.50	0.40	2.60
,, ,, ,,	50	1,750	0.30	11.70	0.40	2.60
,, ,, ,,	50	1,750	0.30	11.70	0.40	2.60
,, ,, ,,	50	1,750	0.40	15.60	0.35	1.27
,, ,, ,,	50	1,750	0.40	15.60	0.35	1.27
To fasten Chinese ladies' trousers at the ankle	2.60	94	*Pair* 0.23	*Pair* 8.97	*Pair* 0.17	*Pair* 1.10
,, ,, ,,	2.60	94	,, 0.23	,, 8.97	,, 0.17	,, 1.10
,, ,, ,,	2.60	94	,, 0.23	,, 8.97	,, 0.17	,, 1.10
,, ,, ,,	2.60	94	,, 0.23	,, 8.97	,, 0.17	,, 1.10
,, ,, ,,	2.60	94	,, 0.23	,, 8.97	,, 0.17	,, 1.10
,, ,, ,,	2.60	94	,, 0.23	,, 8.97	,, 0.17	,, 1.10
,, ,, ,,	2.60	94	,, 0.23	,, 8.97	,, 0.17	,, 1.10
,, ,, ,,	2.60	94	,, 0.23	,, 8.97	,, 0.17	,, 1.10
,, ,, ,,	1.60	70	,, 0.16	,, 6.24	,, 0.16	,, 1.04
,, ,, ,,	2.50	87	,, 0.11	,, 4.29	,, 0.73	,, 0.47
,, ,, ,,	2.50	87	,, 0.11	,, 4.29	,, 0.73	,, 0.47
,, ,, ,,	3.10	108½	,, 0.18	,, 7.02	,, 0.11	,, 0.71

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
357	14	Garter, Silk, plain, aniline blue	品藍女脚	Shanghai
358	15	„ „ „ black	元色女脚	„
359	16	„ „ „ pink	雪青女脚	„
360	17	„ „ „ blue	蛋青女脚	„
361	18	„ „ „ aniline blue	藍色素襪	„
362	19	„ „ „ mixed colours	黑色襪	„
363	20	„ „ „ „ „	五色襪	„
364	21	„ „ „ „ „	品藍花襪	„
365	1	Girdle, figured, blue	月白棋花腰	„
366	2	„ „ white and black	黑白棋花腰	„
367	3	„ „ „ „	品藍梅花腰	„
368	4	„ „ brown	紫藍扣腰	„
369	5	„ „ blue	二藍扣腰	„
370	1	Belt, Silk, figured	黃藍褲	„
371	2	„ „ „	藍素鬚褲	„
372	3	„ „ „	雪青鬚褲	„
373	1	Embroidery binding, blue	品藍緞洒花邊	„
374	2	„ „ „	蛋青緞洒花紬頭	„
375	3	„ „ „	藍緞洒花袖口	„
376	4	„ „ pink	桃紅緞洒花邊	„
377	5	„ „ „	雪青時花梅邊	„
378	6	Embroidered handkerchief	正黃加鬚洒花手巾	„
379	7	„ „	黃紅洒花手巾	„
380	8	„ „	杏黃洒花長巾	„
381	9	„ girdle	正黃時花褲帶	„
382	10	„ satin pillow	大紅緞枕頂	„
383	11	„ „ „	四色緞洒花合枕	„
384	1	Thread, Silk, yellow	杏黃所線	„
385	2	„ „ white	白所絲線	„
386	3	„ „ red	大紅所線	„
387	4	„ „ all colours	三十五色絲線	„
388	5	„ organzine, two colours	桃紅絲經	Suchou-fu
389	6	„ tram, ten colours	十色紆	„
390	1	Raw Silk, white	蘇州香山絲	„
391	2	„ „ „	蘇州光福絲	„
392	3	„ „ „	蘇州二蠶絲	„
393	4	„ „ „	雙林光絲	„

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
To fasten Chinese ladies' trousers at the ankle	3.10	108½	*Pair* 0.18	*Pair* 7.02	*Pair* 0.11	*Pair* 0.71
,, ,, ,,	3.10	108½	,, 0.18	,, 7.02	,, 0.11	,, 0.71
,, ,, ,,	3.10	108½	,, 0.18	,, 7.02	,, 0.11	,, 0.71
,, ,, ,,	3.10	108½	,, 0.18	,, 7.02	,, 0.11	,, 0.71
,, ,, ,,	50	1,750	,, 1.25	,, 48.75	,, 1.10	,, 7.15
By men as stocking garters	2.50	87	,, 0.19	,, 7.41	,, 0.10	,, 0.65
,, ,, ...	2.50	87	,, 0.19	,, 7.41	,, 0.10	,, 0.65
,, ,, ...	2.50	87	,, 0.19	,, 7.41	,, 0.10	,, 0.65
Worn by Chinese round the long dress.....	6.50	220	0.75	29.25	0.43	2.79
,, ,, ,, ...	6	210	0.50	19.50	0.18	1.17
,, ,, ,, ...	6.50	220	0.70	27.30	0.43	2.79
,, ,, ,, ...	3	105	0.60	23.40	0.20	1.30
,, ,, ,, ...	3	105	0.60	23.40	0.20	1.30
,, ,, ,, ...	6	210	0.50	19.50	0.24	1.56
,, ,, ,, ...	6.50	250	0.50	19.50	0.24	1.56
,, ,, ,, ...	4.90	170	0.80	31.20	0.30	1.95
For binding Chinese ladies' dresses	...	...	2.90	113.10	4.30	27.95
,, ,, ,, ,, cuffs	...	...	1.60	62.40	1.29	8.38
,, ,, ,, ,, trousers	2.40	84	0.55	21.45	1	6.50
,, ,, quilts, etc.	4.20	150	0.67	26.13	1	6.50
,, ,, ladies' trousers, cuffs, etc.....	17	595	0.98	38.22	0.90	5.85
By Chinese ladies to wipe the face	...	...	0.47	18.33	1	6.50
,, ,, ...	...	...	0.43	16.77	0.73	4.74
,, ,, ...	...	...	0.60	23.40	0.95	6.17
To support trousers	5.80	200	0.45	17.55	0.50	3.25
By Chinese to make pillows	...	...	0.50	19.50	0.73	4.74
,, ,, ...	...	...	0.20	7.80	0.44	2.86
For making tassels and sewing ladies' shoes, etc.	...	...	100	3,900	28	182
,, ,, ,,	...	...	100	3,900	28	182
,, ,, ,,	...	...	100	3,900	28	182
For sewing	...	...	100	3,900	28	182
As organzine in making Satin	...	...	100	3,900	30	195
As tram in making Satin	...	...	100	3,900	30	195
For making Silk Piece Goods	...	...	100	3,900	16	104
,, ,, ...	...	...	100	3,900	14.60	92.90
,, ,, ...	...	...	100	3,900	13.80	89.70
Principally to make thread	...	...	100	3,900	11.60	75.40

CATALOGUE OF THE SHANGHAI COLLECTION OF

General No.	Class No.	NAME IN ENGLISH.	NAME IN CHINESE.	PLACE OF PRODUCTION.
394	5	Raw Silk, white	雙林粗絲	Suchou-fu .....
395	6	Wild Silk, Raw, brown	雙林野蠶絲	Shuanglin (雙林) .....
396	7	„ „ „ „	雙林野蠶絲	„ .....
397	8	Raw Silk, white	甯波粗絲	Ningpo-fu .....
398	1	Refuse Silk, white, superior	湖州正號絲棉	Huchou-fu .....
399	2	„ „ „ inferior	湖州小口絲棉	„ .....
400	1	Wild cocoons	雙林野蠶繭	Shuanglin (雙林) .....

SPECIMENS OF SILK AND SILK PIECE GOODS—*Cont.*

USE.	LENGTH OF EACH PIECE.		WEIGHT OF EACH PIECE.		PRICE OF EACH PIECE.	
	Chinese Feet.	Centimètres.	Chinese Ounces.	Grammes.	Shanghai Taels.	Francs.
Principally to make thread	...	...	100	3,900	8.80	57.20
For making a kind of Gauze worn by ladies round the head	...	...	100	3,900	14.50	94.25
" " "	...	...	100	3,900	13.80	89.20
For making Gauze (*see* sample No. 167)	...	...	100	3,900	10	65
As wadding, also to make a kind of piece goods (*see* samples Nos. 200 to 205).....	...	...	100	3,900	9	58.50
" " "	...	...	100	3,900	8.10	52.65
To make wild Silk.....	...	...	*Catties* 100	...	26.28	170.82

NINGPO.

CUSTOM HOUSE,
NINGPO, *7th February* 1881.

SIR,

IN conformity with the instructions contained in your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

I have made every endeavour within my power to procure the information called for thereby. I despatched three Natives to visit the Silk-producing localities of Shaohsing, Hangchow, Kiahsing, and Huchow, and I employed a fourth to collect information in the neighbourhood of Ningpo.

However, many obstacles present themselves to such an inquiry which can hardly be understood by anyone unacquainted with this country, and exact and reliable information is not attainable. I would therefore entreat forbearance, and confess that I feel entirely unable to deal with the subject in a manner at all adequate to its importance.

Now that M. RONDOT has directed attention to this subject, it is certain to receive yearly consideration in the Customs "Reports on Trade," and although I must at present fail to supply any important information, yet I know his desire will eventually be satisfied.

Reference to Mr. NOETZLI'S Report on Trade at the Treaty Ports for 1879, page 57, will show that Shanghai and Canton are the only ports from which any considerable quantity of Silk is exported to Foreign countries. During the year 1879 the total export from Ningpo to Foreign ports was only 21 kilogrammes. For the same year the export from Ningpo to Chinese ports was:—

Raw Silk	206 kilogrammes.
Silk Piece Goods	57 „
Silk Tassels	0.90 „

The greater portion of the Silk produced in the departments neighbouring this port is carried to Shanghai by inland navigation, whence it is exported to Foreign countries. In Mr. DREW'S Reports on Trade at Ningpo for 1878 and 1877, pages 148 and 128 respectively, and also in the general Reports on Trade in China for 1877 and 1876, pages 45 and 65 respectively, some information will be found.

I shall now proceed to reply to the 11 queries regarding the production and manufacture of Silk.

1°.—What kind of Raw Silk is produced—

1°, in the province where your office is situated?

Silk from worms fed upon mulberry leaves.

2°, in the provinces or districts where there is no port open to Foreign trade, but with which the province mentioned above holds commercial intercourse?

The province of Chêhkiang does not hold direct commercial intercourse with any province within which there is not a Treaty Port.

2°.—What are the names given to the various kinds of Raw Silk?

Tsatlee (Huchow), Taysaam (Shaohsing), Haining, Kahing white, Kahing green, Fokong, Chinkiun, Wuhsieh, and Leeyang.

3°.—What is the average production of the Raw Silk given—

1°, by the worms fed with mulberry leaves?

In these districts I estimate the production of Raw Silk by worms fed with mulberry leaves to be, in the year 1878, about 2,935,328 kilogrammes, and in the year 1879, about 3,334,751 kilogrammes. I estimate the production to be divided as follows:—

	1878.	1879.
	Kilos.	*Kilos.*
Ningpo	2,049	3,297
Shaohsing	83,262	122,804
Hangchow	517,303	589,197
Kiahsing	489,819	537,811
Huchow	1,842,895	2,081,642
TOTAL	2,935,328	3,334,751

2°, by the worms fed with ailanthus leaves?

Nil.

3°, by worms fed with oak-tree leaves, or on oak trees?

Nil.

4°, by the wild worms fed on mulberry trees?

About 2,000 kilogrammes. This Silk is produced in the district of Shuanglin (雙林) only, which is situated in the department of Huchow. It is lighter in weight and darker in colour than the Silk produced by the cultivated worm.

4°.—It is said Silk is obtained—

1°, from the cocoon of a large worm (Attams Atlas?) living in the Lo-fou Hills (Kwangtung).

I have no information on this subject.

2°, from the reticular cocoon of a worm fed on the camphor tree.

If the statement be true, etc., etc.

I have no information. There is no such worm to be found in this province, so far as I can ascertain.

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5°.—How many, where, have establishments where Foreign machinery is used to reel Silk been started in China?

Three filatures were erected near Shanghai; of these three but one continues working. In the general Report on Trade by Mr. NOETZLI for 1879, page 58, mention is made of this surviving filature as having been erected by an American firm. It is also stated, on the same page, that a German firm had commenced Silk-weaving at Chefoo. Reference to the Shanghai and Chefoo Reports on Silk culture contained in this volume will give exact information on the subject. An unsuccessful attempt was made to put up a filature at Hangchow in this province.

6°.—How many, where, do Native establishments to make Thrown Silk exist in China?

I do not know of any "establishments" to make Thrown Silk. It is made in "dwellings" and "shops." In Shaohsing the number of wheels for the manufacture of Thrown Silk is estimated to be about 205, and at Hangchow about 1,300. It is stated that at Kiahsing and Huchow Thrown Silk is not manufactured. At Shaohsing there are more than 200 apparatus for throwing Silk, on each of which 40 taels weight may be thrown daily. There is a loss of 12 per cent. in the throwing. The value of Thrown Silk is $38 for 100 taels weight, while the workman receives $8 for throwing that quantity.

7°.—How many, where, do Silk-weaving looms exist in China?

The number of Silk-weaving looms in this part of Chêhkiang I estimate at about 9,450. They exist in—

Ningpo	850
Shaohsing	1,600
Hangchow	3,000
Kiahsing	*Nil.*
Huchow	4,000
TOTAL	9,450

Besides these looms, there are at Hangchow 1,300 wheels for throwing Silk, and at Shaohsing 205 wheels.

Below will be found a summary specifying the various manufactures in which the looms and wheels above enumerated are employed. At Shaohsing-fu (紹興府) there are employed in the manufacture of—

Satin	100 looms.
Silk Crape	200 „
„ Gauze	100 „
Pongee	1,200 „
Total looms in Shaohsing	1,600

and in the manufacture of Thrown Silk, 205 wheels. The looms and wheels in Hangchow are employed as under :—

Satin	200 looms.
Silk Crape	1,200 „
„ Gauze	600 „
Pongee	1,000 „
Total looms in Hangchow . . .	3,000

and Thrown Silk, 1,300 wheels. The looms in Huchow are all employed in manufacturing Silk Crape, and may be estimated at 4,000. As before remarked, the manufacture of Thrown Silk is not carried on in this city.

8°.—What is the probable production in each province—

1°, of Thrown Silk?

It is stated that in this province the probable production of Thrown Silk is 15,000 bales, that is, about 720,000 kilogrammes.

2°, of Silk Piece Goods?

Of Silk Piece Goods, the probable production is 332,377 pieces, which are divided among the various producing centres, as nearly as I can ascertain, as follows:—

Ningpo	8,820 pieces.
Shaohsing	34,125 „
Hangchow	75,232 „
Kiahsing	*Nil.*
Huchow	214,200 „
TOTAL	332,377 pieces.

9°.—Has the Taiping insurrection done any harm to the quality of Silk manufactures? Have the old establishments been restored at the same places, or have they been transferred elsewhere?

The Taiping insurrection, I am informed, has not caused any deterioration in quality. It must have greatly, but temporarily, decreased the power of production and the local demand. After the rebellion the manufacture was resumed in most cases in the original places. Three hongs moved from Hangchow to Ningpo.

10°.—What are the places where Silk manufactures for the Imperial Court and rich families are made at the present time?

For the Court, Nanking, Soochow, and Hangchow. It is said that at Soochow there are about 250 looms and 350 weavers, and at Hangchow 115 looms with 250 weavers, employed specially in the manufacture of Silk for the imperial family. The weaver's pay is supposed to be *Tls.* 4 per month, and when not working for the Emperor, he is permitted to work on his own account.

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Rich families do not purchase in any particular place. They obtain their Silk in the ordinary way.

11°.—What are the Silk goods of a manufacture special to China or little known in Europe? I shall mention, for instance, goods (Crapes particularly) made of a mixture of mulberry and oak-tree worms' Silks, Damasked Gauzes, Velvets worked with gold, large-grain Camlets made of Silk and Cashmere, Brocades for ladies' dresses, Silks made of oak-tree Silk or of ailanthus-tree Silk, the figured tissue made on a vertical loom called Khesse, Ribbons, etc. If possible, send a sample, however small, of each Silk manufacture, with a label showing its Chinese name, the meaning of the name, the place of production, the use of it, the nature of the primitive material, the price of it (giving the sizes), etc.

It is my opinion that specimens of all kinds have in the regular course of business been submitted to the judgment of European merchants, who have naturally exported whatever they considered likely to find favour in Europe.

In obedience to your instructions, I have used my best endeavours to elucidate certain points raised by M. RONDOT, and which, for the sake of clearness, I reiterate below.

On est bien près d'avoir trouvé des procédés qui auront pour résultat un emploi plus régulier et plus important des Soies provenant *des vers sauvages; la connaissance de ce qui se rapporte à ces Soies serait utile.*

I much regret that I am unable to impart any information in regard to Wild Silk, which production, although to be found in the province, is in small quantities, and represents a trade of very slight importance. In the district of Shuanglin (雙林), situated in the department of Huchow, there is a wild worm which constructs its cocoon upon the mulberry tree. The Silk from this cocoon (termed Wild Silk) is of a brownish colour, and lighter in weight than the ordinary Silk produced by the domestic worm. I do not believe that Wild Silk is to be found elsewhere in this province.

Il serait à désirer surtout que l'on pût connaître mieux en Europe *les ressources que la Chine offre en produits que le commerce a négligés jusqu'à présent.*

I do not believe there are any products likely to suit the European market which have not received the attention of European merchants. Commerce attends to its own interests with great avidity.

About two-thirds of the Raw Silk in these districts is for the Foreign market. In Shaohsing, Silk is chiefly produced in the districts of Tszchi (諸暨) and Chinghsien (嵊縣), and is in long skeins (長車), and known by the name of Feissŭ (肥絲). It may be as well here to enumerate, with a brief description of each, the most important of the various Silk manufactures, under the headings of the chief places of their production.

SHAOHSING-FU.—In this city there are a quantity of looms engaged in the manufacture of Crape turbans, Satin, and Gauze. The Fangch'ow (紡綢) (Pongee), a kind of light plain Silk suitable for clothing in warm weather, together with Ningch'ow (甯綢), T'uch'ow (土綢),

Chunch'ow (春 綢)—all Pongees,—and Hsiench'ow (線 縐), Thread Crape, all give occupation to numerous looms and many families in the neighbourhood. In weaving there is said to be a loss of 30 per cent. in weight, and the Piece Goods are said to shrink at the rate of 5 inches per chang in the process of dyeing.

Crape Turbans.—There are two kinds of Crape used. One is 4.2 changs long, 6 inches wide, and 19 taels in weight; value, $0.80. Cost of labour in weaving, 1½ *cash* per foot, with food. The other kind is 4.2 changs long, 1.4 chih wide, 6.5 taels in weight; value, $3 per piece. Cost of labour, 2½ *cash* per foot, with food.

Satin.—Length, 3.8 chang; width, 2 chih and 2 tsun; weight, 30 taels; value, $15 for inferior quality, containing starch. The better qualities of this material range to $40 per piece.* Cost of labour, 25 *cash* per foot, with food. The looms turn out five pieces per month.

Gauze.—Length, 5.2 chang; breadth, 2 chih; weight, 30 taels; value, $9.10 per piece. Cost of labour, 624 *cash* per piece, and food. Loom turns out five pieces per month.

Fangch'ow (紡 綢).—Length, 4.4 chang; breadth, 1 chih 7½ tsun; weight, 23 taels; value, $8.50 per piece. Cost of labour, 540 *cash* per piece, and food. Loom turns out six pieces per month.

Ningch'ow (甯 綢).—Length, 4.4 chang; width, 2 chih; weight, 4.4 taels; value, 1st quality, $0.55 per foot; 2nd quality, $0.45 per foot. Cost of labour, 82 *cash* per foot. Loom turns out four pieces per month.

T'uch'ow (土 綢).—Length, 4.4 chang; breadth, 1 chih 5 tsun; weight, 13 taels; value, $3.20 per piece. Cost of labour, 540 *cash* per piece, and food. Loom turns out six pieces per month.

Chunch'ow (春 綢).—Length, 3.2 chang; breadth, 1 chih 8 tsun; weight, 17 taels. Loom turns out six pieces per month.

Hsiench'ow (線 縐).—Length, 4.4 to 5 chang; width, 1 chih 8 tsun; weight, 30 taels; value, $16.50 per piece. Weaver receives 56 *cash* per foot, with food. Loom turns out five pieces a month.

At Shaohsing, and in the village of Chêntsê (震 澤), on the southern borders of the Kiangsu province, a Silk and cotton mixture is manufactured similar to the northern Miench'ow (棉 綢), but far superior in finish, although perhaps not so durable. This fabric appears in the market as a plain as well as a figured lustring, of various colours, but mauve, lilac, and light blue are the colours most favoured by women and children; plain white is used by men for underclothing (Catalogue, Nos. 7 to 15). The long (warp) thread of this material is Silk, and the cross thread (weft) is cotton. There are two kinds. Hsienling (線 綾) is 4 chang in length, 12 inches wide, and 16 taels in weight; value, $3.40 per piece. Ssŭpu (絲 布) is 36 chih in length, 10 inches wide, and 10 taels in weight; value, $1.60 per piece.

* An agreement was entered into last year by all the manufacturers to discontinue starching their goods. For breach of this contract a heavy fine is inflicted.

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HANGCHOW.—In the Hangchow prefecture very fine Silk is cultivated for the Foreign market. It is known by the names of the districts where it is produced. Two kinds are well known, namely, P'ingyao (平 窯) and Ch'ili (七 里) (Tsatlee). The Feissŭ (肥 絲) of Hangchow is, I am informed, not exported, but is used for weaving piece goods.

Hangchow is celebrated for its Silk manufactures. The manufacture of Hsienchow (線 縐) and Ningch'ow (甯 綢) make up a large proportion of the industry. The best Crape in the Empire also comes from this city. A summary of the chief manufactures, with brief description of each, will be found below.

Satin.—This corresponds in all details of workmanship and cost with that made at Shaohsing *(vide supra)*, except that the breadth varies from 23 inches to 28 inches.

Hsienchow (線 縐).—Length, 4.4 chang; width, 18 inches; weight, 31 taels; average price, $17 per piece. Cost of labour, 2,280 *cash* per piece. Loom turns out four to five per month. Hangchow and Haining Silks, in equal proportions, are generally used in its manufacture. Haining Silk, being of finer and better quality, forms the organzine, of which 3,800 threads are contained in the warp.

Ningch'ow (甯 綢).—Length, 5 chang; width, 22 inches; weight, 47½ taels; value, $26.50 per piece. Loom turns out five per month. Cost of labour, 4,100 *cash* per piece. Hangchow and Haining Silks are used in same proportion as in weaving Hsienchow. Warp consists of 4,800 threads (Haining) organzine.

Fangch'ow (紡 綢).—Length, 4.4 chang; width, 17 inches; weight, 30 to 40 taels; value, $11.40 to $15.20 per piece. Cost of labour, 800 *cash* per piece, and food. Loom turns out six pieces monthly. This sort of piece goods is made entirely of Thrown Silk, 2,400 threads of which form the warp. In weaving plain goods, among which the fabric Fangch'ow is to be classed, one workman performs the whole work. In weaving patterns, among which some descriptions of Lo are to be classed, two, and sometimes three, are employed.

Lo (羅).—A sort of striped Gauze. Length, 4.4 chang; breadth, 18 inches; weight, 20 to 30 taels; price, $9 to $13.50 per piece. The weaving is done by two men, who, found in food, receive monthly wages of 4,000 *cash* each. The loom turns out five pieces in a month. There are 1,900 threads of organzine in the warp. Only Hangchow Silk is used.

Hsienchun (線 春).—A kind of thread Gauze. Length, 3.6 chang; width, 23 inches; weight, 40 taels; price, $18 per piece. Two workmen are employed at 2,070 *cash* per piece. Loom will turn out eight pieces per month. The warp consists of 3,200 threads organzine.

Chunsha (春 紗).—A kind of Gauze. Length, 3.6 chang; width, 21 inches; weight, 45 taels; value, $18. Cost of labour, two workmen at 1,550 *cash* each per piece. Loom turns out four pieces per month. Hangchow and Haining Silks are used in equal proportions, 2,700 threads Haining forming the warp.

HAINING (海 甯).—At Haining a fine Silk, in short skeins, is manufactured, some of which is exported. It forms the long thread in Satin, and is known to Chinese as Haining-ssŭ (海 甯 絲).

KIAHSING (嘉興).—At Kiahsing, as well as Shaohsing, the well-known Tatsan (Taysaam) (大纔) is produced. It is all sent to the Foreign market.

HUCHOW.—At Huchow only one kind of Crape, called Huchow (湖縐), is manufactured. It is 4.7 chang in length, 14½ inches wide, weight from 38 to 45 taels, and costs from *Tls.* 9.50 to *Tls.* 10.50 per piece. Two men are employed at 1,600 *cash* per piece. Loom turns out eight or nine pieces per month. There are (1°) 2,640 or (2°) 2,440 (two kinds) threads organzine in the warp.

NINGPO.—At Ningpo there are a few looms engaged in the manufacture of a black and dark purple Satin, which, according to some, is the finest Satin made in the Empire. This information, however, is open to doubt, as it is most probable the same kind of Satin, though in small quantities, is manufactured at Hangchow. For the rest, the well-known Hsienchow and Ningch'ow occupy the majority of the looms in their manufacture in or about Ningpo.

Satin.—Length, 4.7 to 4.9 chang; width, 27 inches; weight, 57 to 60 taels; value, *Tls.* 28 to *Tls.* 34. Warp contains 13,000 threads organzine. A loom turns out two pieces per month. Cost of labour, two weavers at 134 *cash* for both per foot, together with food. Organzine consists of Haining Silk, woof of Shaohsing.

Hsienchow.—Length, 4.3 chang; width, 18 inches; weight, 30 taels; value, $12.60. Cost of labour, two weavers receive 58 *cash* per foot between them. A loom will turn out six to seven pieces per month.

Ningch'ow.—Length, 5.2 chang; width, 22 and 27 inches; weight, 40 and 55 taels; value, $22 and $28 per piece. Cost of labour, two men at 84 *cash* each per foot. Warp contains 4,400 threads Haining; weft is Shaohsing Silk. Loom turns out five pieces monthly. Very fine Silk for the Foreign market is produced at Nanzing (南潯), in Huchow-fu. I am informed that the yearly production of Nanzing Silk previous to the rebellion was 30,000 kilogrammes, and that it has now increased to 42,000 kilogrammes. Other districts in the same neighbourhood produce fine Silk of much the same quality; among these may be mentioned Tunghsiang (桐鄉), Shihmên (石門), Wuching (烏鎮), and Hsinshih (新市).

The manufacture of Velvet has decreased of late, but the production of Silk is increasing and its manufacture improving.

There are four varieties of silkworms in this province, the scientific names of which I have been unable to ascertain. They are known here as—

1°. Chinchung (金種), a small worm, which produces white Silk.

2°. Huats'an-chung (花蠶種), larger, with black and yellow stripes, and spotted. This worm produces white Silk.

3°. Yenchung (鹽種), a white worm, which produces white Silk.

4°. Tanchung (淡種).

In case of an insufficient supply of mulberry leaves, worms are sometimes fed on the leaves of the chê (柘) tree; however, in that case, many die. The Silk produced by worms fed on the chê tree is yellow.

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"The tree termed chê (柘) in Chinese books is cultivated for rearing silkworms. The fruit is said to resemble that of the mulberry, and the seeds pepper. The wood is used for dyeing purposes, and supplies a yellowish red dye. One kind, nüchê (奴 柘), growing wild on the mountains of Kiangnan, is of a smaller size and covered with thorns. The leaves resemble those of the oak, and silkworms are fed on them. (*Pen-tsao-kung-mu*, xxxvi, fol. 11 and 12. Compare also the drawings, *Chi-wu-ming*, xxxv, 46, 27.)

"Mr. I. HEDDE mentions these trees in his *Industrie sérigène en Chine* (1848), p. 109. He had obtained a living chê tree from Chusan, but it perished in France. I have heard that the tree is also found near Chefoo."*

The yearly production of Silk used for weaving piece goods is said to exceed 100,000 bales, of 80 catties each (say about 4,800,000 kilogrammes), and for thread and Ribbons about 20,000 bales of the same size are said to be used yearly. For weaving tribute goods for the Court, the yearly consumption it said to be about 200 bales.

I append herewith a Catalogue of the specimens of Silk and Silk manufactures forwarded as likely to prove useful to M. RONDOT, and also a table of weights, measurements, and money, with their equivalent values in French measures, in order to facilitate their ready conversion.

I have, etc.,

R. B. MOORHEAD,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

* Extract from "Notes on some Botanical Questions connected with the Export Trade of China," by E. BRETSCHNEIDER, M.D.—*North-China Daily News*, 19th January 1881.

ENCLOSURE No. 1.

Catalogue of Silks and Silk Manufactures.

No.	Name in English.	Name in Chinese.	Length.	Breadth.	Weight.	Value.	Place of Production.
			Mètres	*Déci-mètres.*	*Taels.*		
1	Wild cocoons	野蚕繭	...	...	...	600 *cash* per basket, yielding 3 catties = 1.8 kilos. Raw Silk.	Shuanglin.
2	„ Raw Silk	野蚕絲	...	...	...	$335 per picul = 60 kilos.	„
3	White Silk (Kungssŭ)	白工絲	...	...	...	$272 / $288 / $320 „	Hangchow.
4	„ „ (Kuangssŭ)	白光絲	...	...	...	$264 / $272 „	„
5	„ „ (Ch'aossŭ)	白抄絲	...	...	...	$192 / $200 / $224 „	Shaohsing.
6	Brown Silk (Ch'aossŭ)	赤抄絲	...	...	...	$192 „	Shuanglin.
						Per Piece.	
7	Silk and cotton mixture, plain, mauve (Ssŭpu)	雪青素絲布	12.96	40	...	$2.20	Shaohsing and Chiahsing.
8	„ „ „	淡青素絲布	12.96	40	...	...	„
9	Silk and cotton mixture, figured, mauve (Ssŭpu)	雪青花絲布	14.4	47	...	$4.20	„
10	„ „ „	雪青四合如意花絲布	12.96	40	...	$2.20	„
11	„ „ „	雪青四合如意花絲布	12.96	40	...	...	„
12	Silk and cotton mixture, figured, yellow (Ssŭpu)	黃色四合如意花絲布	12.96	40	...	...	„
13	Silk and cotton mixture, figured, black (Ssŭpu)	黑花絲布	14.4	47	...	$4.40	„
14	„ „ „	黑花絲布	14.4	47	...	...	„
15	Silk and cotton mixture, figured, blue (Hsienling)	藍色子孫連元線綾	14.4	47	...	...	„
16	Damask Silk, mauve (Hsienling-ch'ow)	雪青空八仙線綾綢	14.4	47	18	$9	Chiahsing.
17	„ „ brown „	棕色斗紋花線綾綢	14.4	47	18	$9	„
18	Figured Silk (Poch'ow)	藍方錦時花僕綢	14.4	47	18	$9	„
19	Coarse white Silk (Ssŭmien-ch'ow)	白棉綢	25.2	47	...	$7–$10.50	„
20	„ green „ „	綠棉綢	25.2	47	...	$7–$10.50	„
21	„ red „ „	桃紅棉綢	25.2	47	...	$7–$10.50	„
22	„ „ „ „	銀紅棉綢	25.2	47	...	$7–$10.50	„
23	„ blue „ „	藍棉綢	25.2	47	...	$7–$10.50	„
24	„ lilac „ „	棕色棉綢	25.2	47	...	$7–$10.50	„

CATALOGUE OF SILKS AND SILK MANUFACTURES—*Cont.*

No.	NAME IN ENGLISH.	NAME IN CHINESE.	Length.	Breadth.	Weight.	VALUE.	PLACE OF PRODUCTION.
			Mètres	*Déci-mètres.*	*Taels.*	*Per Piece.*	
25	Crape, figured, black (Huchow)	黑通球湖縐	16.56	49	25–30	$13.50–$15	Huchow.
26	„ „ „ „	黑蝶連元湖縐	16.56	49	25–30	$13.50–$15	„
27	„ „ „ „	黑桂如意湖縐	16.56	49	25–30	$13.50–$15	„
28	„ „ „ „	黑新子省湖縐	16.56	49	25–30	$13.50–$15	„
29	„ „ brown „	棕色芝藤花湖縐	16.56	49	25–30	$13.50–$15	„
30	„ „ „ „	棕色三多湖縐	16.56	49	25–30	$13.50–$15	„
31	„ „ yellow „	黃色梅花連元湖縐	16.56	49	25–30	$13.50–$15	„
32	„ „ mauve „	茄色雙子連元湖縐	16.56	49	25–30	$13.50–$15	„
33	„ „ blue „	藍色四友湖縐	16.56	49	25–30	$13.50–$15	„
34	„ „ „ „	藍色如意湖縐	16.56	49	25–30	$13.50–$15	„
35	„ „ „ „	藍色六雲龍湖縐	16.56	49	25–30	$13.50–$15	„
36	„ „ „ „	藍色雙六丹湖縐	16.56	49	25–30	$13.50–$15	„
37	„ „ grey „	灰色如一連元湖縐	16.56	49	25–30	$13.50–$15	„
38	„ „ white „	白凈連元湖縐	16.56	49	25–30	$13.50–$15	„
39	„ „ yellow „	米色鶴桃湖縐	16.56	49	25–30	$13.50–$15	„

ENCLOSURE No. 2.

TABLE of CHINESE MEASURES and WEIGHTS, with their Equivalents, according to the French Metrical System.

MEASUREMENT.

1 tsun (inch)	. . .	= 3.55 centimètres.			
10 „	. . . . .	= 1 chih (foot)	. .	=	35.50 centimètres.
10 chih (or 100 tsun)	.	= 1 chang (yard)	. .	= 355	„

WEIGHT.

1 tael (ounce)	. . .	= 0.3532 kilogrammes.			
16 taels	. . .	= 1 catty (pound)	.	=	4.53 kilogrammes.
100 catties	. . . . .	= 1 picul	. . . . .	= 453	„

MONEY.

12 *cash*	. . . . .	= 1 sou (or 5 centimes).			
240 „	. . . . .	= 1 franc.			
1,200 „	. . . . .	= 1 dollar	. . . .	= 5 francs (about).	
1,600 „	. . . . .	= 1 tael	. . . . .	= 7 „	„

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No. 70.

CUSTOM HOUSE,
WÊNCHOW, *23rd September* 1880.

SIR,

THIS not being a Silk port, I regret to say that I have been quite unable to obtain such information on the subject as would be requisite to reply to the inquiries contained in Circular No. 103, 10th May 1880:

Silk culture in China: reports upon, called for.

A few Silk shops exist here, necessary to supply the demand for clothing by the upper classes; but the owners are entirely ignorant of anything beyond what is required to conduct their own retail business, and all that I have been able to learn from them may be very briefly summarised.

The Wênchow Pongees are usually made of 'Huchow (湖州) Raw Silk, but sometimes of Lanch'i (蘭溪) and Chiahsing (嘉興). The 'Huchow is superior, and bears a higher value in the market. It is probable that Lanch'i and Chiahsing on this account are sometimes mixed with it, and the Pongees thus manufactured are then palmed off as being made of pure 'Huchow Silk. The so-called Wênchow Raw Silk is produced at Nanch'i (楠溪) and Hsich'i (西溪). About 52 piculs at the former and 15 piculs at the latter place is said to be the annual quantity produced. The value of the superior kind ranges from $320 to $450, and the inferior from $230 to $300, per picul. This Silk, however, is coarse, and its colour dull, nor is it so glossy as the 'Huchow, Lanch'i, and Chiahsing kinds; it is therefore only used as thread. Nanch'i and Hsich'i are both in this district—Yungchia (永嘉). It is easy to see from this why Silk is not exported from Wênchow, and that the Pongees which it manufactures (from a superior raw material produced in a district which has other and more convenient outlets) are solely for local consumption. The shopkeepers know nothing about worms fed on ailanthus leaves or oak-tree leaves; it is the mulberry leaf which supports the worm in this region. Nor are they better informed regarding cocoons, whether those from a large worm living in the Lofou Hills, or the reticular cocoon of a worm which feeds on the camphor tree. The use of Foreign machinery to reel Silk is something of which they have never heard. But Mr. FAUVEL, in his essay on "The Wild Silkworms of the Province of Shantung," mentions: "A large Silk-reeling establishment under the supervision of Foreigners is now in process of completion near Chefoo."* This, I suppose, implies the use of Foreign machinery, and is the only thing of the kind in China, so far as I know. Hangchow (杭州) is considered as one of the great seats of Silk industry in this country, and it is there that the Silk required by the Imperial Court is principally made.

* *China Review*, vol. vi, p. 104.

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The terms *Tsatlee* (七里) and *Taysaam* (大蠶) are much used in the Silk trade. The derivation of the former is obscure. One informant assures me that it is the name of a town, seven miles long, famous for its Silk manufacture. This differs from the explanation given by M. RONDOT, "(soie filée à) sept cocons." No mention of this large town is made in PLAYFAIR'S *Geographical Dictionary*, nor can it be found in the *Atlas of the Chinese Empire* (in Chinese). *The Commercial Guide* (5th edition, p. 136), while naming *Tsatlee*, has resisted the temptation so common in such cases to translate its meaning (perhaps because in its present connection it is not translatable), although in the next line the author indulges in the translation of *Taysaam* as "great worm," which agrees with M. RONDOT'S "gros ver." The characters which have been employed for *Tsatlee*, being two of the simplest in the language, may originally have been manufactured by some illiterate comprador for a Foreign employer ignorant of Chinese, and have so long passed unchallenged that it would now be useless to attempt to root them out. A lettered Chinese suggests 七縷 as the proper characters to represent *Tsatlee*. Assuming this as a possibility, and discarding the "seven miles long" theory as absurd, and accepting M. RONDOT'S explanation, which is natural and simple, it follows that the description of Silk called *Tsatlee* may be made anywhere. This deduction is confirmed by the following passage from *The Middle Kingdom* (edition of 1876, p. 122): "The best Silk is found in the provinces of Szechwan, Hupeh, Chêhkiang, and Kiangnan, but every province south of 35° N. produces it of different degrees of fineness. Probably the kind called *Tsatlee*, brought from Hupeh, is the finest Silk found in the world."

In consulting such few books as were available, I found in the *Chinese Miscellany*, a little work published at Shanghai in 1849, and now out of print, a few pages devoted to the management of mulberry trees and the method of rearing silkworms. These have been copied, and form an enclosure in this despatch. The information given may possibly be of little value in itself, besides being only in lateral connection with the subject of Silk, but it will at least serve to contrast the Chinese and Foreign systems, and show the difference which exists between them. The writer was a Foreign missionary (the Rev. Mr. MILNE ?), who travelled in this (Chêhkiang) and other provinces disguised as a Chinese. To travel openly in those days, judging from his remarks, was an offence. The author is very careful to point this out, and he appears to have taken some credit to himself for braving the dangers of the journey under such circumstances. If it was illegal at that time (shortly after the Nanking Treaty concluded by POTTINGER in 1842) for a Foreigner to travel in the interior (and perhaps it was so), doing so disguised as a Chinese could in no way have lessened the illegality. But this reflection seems not to have occurred to the author, who is evidently a simple, sincere man. He gives elaborate directions how to dress *à la chinois*, and describes minutely his own costume. Chinese shoes he found awkward and troublesome to wear, besides being deficient in stability; and the queue was always a source of anxiety. On one occasion he left his seat without knowing that it had come off and remained behind. Fortunately, his companion recovered it before its loss was noticed by others, and thus no harm resulted. When in due time in the course of his travels he arrived at 'Huchow (湖州), the importance of that place as a centre of Silk manufacture moved him to take up his parable and discourse upon Silk. Hence his present utterance, which is a translation of a work by the

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Treasurer of the province of Chêhkiang, which had a wide reputation at that time, and was probably considered as the principal authority on the subject.

It has been impossible for me, owing to ignorance of so technical a subject, which would be better treated by a specialist, to reply *seriatim* to the questions in the circular, and the attempt to obtain detailed information from the few books at command has been fruitless. WILLIAMS'S *Middle Kingdom* contains little more than a few general remarks (vol. ii, pp. 121–124 and 402), his *Commercial Guide* is rather fuller (pp. 136–138); but neither work has proved of any practical assistance. In the latter, the reader is referred to ISIDORE HEDDE'S *Exposition des Produits de l'Industrie Sérigène en Chine* for a detailed description of the growth and manufacture of Silk in China; but this book is not obtainable here, and perhaps few Foreign libraries in this country possess it. The *Penny Cyclopædia* (1841) has also been consulted, and although it contains a mass of valuable information, historical and descriptive, relating to the treatment and manufacture of Silk in Europe, it is of little value in dealing with Silk culture in China. Under the circumstances, therefore, I have been obliged to be contented with a collection of 40 specimens of Wênchow Pongees to represent the Silk culture of this place. Fifty kinds were sent to the Paris Exhibition of 1878 by Mr. Commissioner HOBSON (*see* the official Catalogue, pp. 29 and 30, issued by the Customs Press), but at the present moment musters of more than 40 could not be obtained without either having pieces specially made, or waiting until the stocks in the shops were replenished. As the difference is mostly one of colour, and not of price or quality, it was thought that the slips now sent would be sufficiently representative for the purpose required. M. RONDOT'S acquaintance with Silk may enable him by their inspection to obtain that practical knowledge which seems to be one aim of his inquiries.

These 40 muster-slips are now forwarded in duplicate, sewn in two books, one for the Inspectorate, and one stored with the Statistical Department for ultimate transmission to M. RONDOT.

I am sensible that this contribution to the subject of Silk culture in China is very inadequate to the full satisfaction of the inquiries set forth in the circular, but proper means for affording that satisfaction do not exist at this port, and, with all the efforts that have been made are not, I regret to add, within my control.

I have, etc.,

JAS. MACKEY,
Assistant-in-Charge.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

ENCLOSURE.

ON THE GROWTH AND TREATMENT OF MULBERRY TREES, AND THE METHOD OF BREEDING AND REARING SILKWORMS. (Extracts from the *Chinese Miscellany:* Shanghai, Mission Press, 1849.)

As Hoochow is the principal seat of the Silk cultivation in China, it may be expected that some account would be rendered of that important branch of industry; which I cannot better do than by giving some extracts from a work on the Silk culture lately issued by the Treasurer of the province, in order to encourage and direct the inhabitants of this district in extending and improving it. He begins by remarking

On the different kinds of Mulberry Trees.

The mulberry being the most essential requisite for the silkworm, to rear the latter the former must be attended to.

There are two kinds of mulberry, the loo (魯), found in the north, and the king (荆), in the south part of China; the former has large leaves, with but little fruit, and a firm root; the latter kind has smaller leaves, with much fruit, but it is comparatively a more hardy plant.

Most of the mulberry saplings are derived from the southern species; and the best plan is to plant this kind first, and graft the northern mulberry upon it, when you get a firm root, with abundance of leaves.

On the Mode of (接桑) *ingrafting the Mulberry.*

Take a twig of the northern variety, three inches or more in length, and, cutting off a portion of it slantwise, in the shape of a horse-shoe, about an inch or more long, insert it quickly within the rind of the southern mulberry plant; then bind it round, and cover it with a lump of earth.

But this can only be done at a favourable season, by an expert and careful hand; added to which the binding must be tight and the plastering thick. Choose some time just before or after the vernal equinox, when the weather is fine; and on the sprouting of the buds, retain only one, which in autumn will become a mulberry sapling.

On (移栽) *transplanting and* (翦桑) *clipping the Mulberry.*

In planting the saplings, a space of 5 feet or more must be allowed for each tree, and they must be disposed in a triangular form, like the character p'hin (品), and not one opposite to another. In the month of February following, when the weather is pure and genial, cut off the top of the plant, at the height of 2 feet from ground.

When the buds shall have sprouted forth, retain only two, which will become branches in the latter part of autumn, about 5 feet or 6 feet long. Then in the month of February of the next year, cut off the tops of these branches to within a foot or more of their stem, thus giving the plant the appearance of the letter Y; and retain, as before, two buds on the end of each branch, cutting off all the rest. In the ensuing year, clip off the new branches again, always leaving a foot or more, according to the former method; and thus go on clipping and retaining again and again, and the branches will continue to double their number.

In about five or six years or more, a little after summer sets in, commence cutting and clipping both branches and leaves, in order to feed the worms.

After having clipped the plant for a number of years, the tree will assume a knobbed appearance, having upon it from 16 to 17 knobs or fists, when it gets the name of the (拳桑) fist-like mulberry. Upon the larger knobs you may retain three or four branches, and on the setting in of the ensuing summer,

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you may clip off from the knobbed parts both twigs and leaves, to feed the worms. This is done, on the one hand, to save labour, and on the other, to enable you to hang up the inverted branches in an airy place, lest the leaves should have been moistened by rain or damp; after a short time they will become dry, when you can take them to feed the worms with.

Method of cutting off (科 斫) *the Mulberry Twigs.*

In cutting off these, never retain the central branch, and then the branches will spread on all sides. There are four kinds of branches which must be pruned away: 1st, the leihshwûy-teaôu (瀝水條), water-dropping branches, or such as droop down; 2nd, the tszeshin-teaôu (刺身條), self-stabbing branches, or such as grow inwards; 3rd, the pingche-teaôu (駢枝條), double branches, or those which grow together, of which only one must be selected; 4th, the yuentso-teaôu (冗脞條), thick-set branches, or such as grow thickly together, although otherwise in proper form.

After the mulberry twigs have been clipped off, loosen the earth carefully near the roots, and bury about them oilcakes that have been dissolved in hot water, a cupful or more to each plant.

When the sprouts reappear, they are called meiteaôu (莓條), fresh shoots; these, by autumn, will have grown 8 feet in length.

In the winter you should apply some thick dung and rich mould, when in the ensuing year the exuberance of the foliage will be redoubled.

General Remarks on the (蠶性) *Nature of the Silkworm.*

As silkworms belong to the yang (楊), superior principle of nature, they love fire and hate water; thus it is that they eat without drinking. Silkworms are naturally fond of stillness, while they dislike noise; they likewise prefer to be warm, but abhor dampness. Whilst in the egg state, they must be kept particularly cool, but as soon as they are hatched, they must be kept very warm. On awaking from their first sleep, they require warmth, but after their principal sleep, coldness is requisite. As they become old, the warmth must be gradually increased; and when put upon the bush to spin, they must be kept extremely warm.

Silkworms require to be tsê (齊), equal, in three things: the eggs should all be laid together, they must all be hatched together, and begin to spin together. There are five things, ê (宜), proper for silkworms: when beginning to sleep, they require to be kept dark and dry; after awaking, they require light; when going to eat, they require plenty of leaves and fast feeding; and when awaking again, they are afraid of wind, and at such times require few leaves and slow feeding. There are seven things which they kè (忌), abhor: from the time they are first hatched up to maturity, they abhor smoke; they also abhor wine, vinegar, and all kinds of acrid things; they abhor musk and the smell of oil; on being fed, they abhor damp leaves; they likewise abhor hot ones; they cannot bear to be near where people pound in a mortar; neither do they like mourning, nor pregnant women. Those who are skilful in rearing silkworms take care that the grubs are produced about the middle of April, and that they come to maturity in 27 days, in which case they are seldom ill, consume few leaves, and produce abundance of Silk.

On (浴種) *washing the Eggs* (生蟻) *and hatching the Grubs.*

The collection of silkworms' eggs is called a lëên (連), card, which are the eggs from the cocoons of the last year's worms. In the beginning of April, soak the card for a quarter of an hour in pure water, and then take them out; this is called yühtsân (浴蠶), bathing the silkworms; then spread them out in an airy place till they are dry, after which wrap them up first in paper, then in cotton, and put them aside in a clean, quiet spot. In seven days, take them out to look at them, and when their colour shall have turned to a pea green, they must be looked at every day. Should three or four come out before the rest, let them be brushed off with a feather as useless; these are called h'ingmà-ê (行馬蟻), or galloping

grubs, and would, if retained, cause the worms to be unequal in age. When about one-third of the grubs have come forth, still wrap them up as before, for should these not feed on leaves for one day, it will be no matter. On the next day, take the cards out and spread them in a warm spot, when the worms will all come out together.

The grubs come forth mostly from 10 to 12 in the morning.

On removing the Grubs (下蟻) *from the Cards.*

When the ê (蟻), grubs, have all come forth together, take some mulberry leaves, cut into threads as fine as silk, and scatter them over the surface of the card; wait until the grubs shall have crawled on the cut leaves, and then take them up very gently with the ts'anchao (蠶箸), silkworm nippers, and move them away over to one place. You must not on any account use a goose's feather to brush them off with, as it will injure and wound the grubs. Should the grubs not have come forth all together, wrap the card up again, and on the morrow take it down as described above; but place the grubs that came out last in a separate spot, and on no account deposit them in the same place with those previously hatched, lest you should have worms of unequal ages together. In removing the grubs, let them be equally distributed; the keeping them too much apart, and huddling them together, are alike to be avoided. The worms must be removed only twice; should any remain upon the card without coming out, lay them aside, for they are weakly, diseased grubs, and it will be useless to rear them.

When the black grubs have all come forth, weigh them together with the cards, and put down the exact weight; after which weigh the empty cards, and you will be able to ascertain the net weight of the worms. For every ounce weight of grubs you may obtain about 150 or 160 ounces of Silk, and the worms will devour about 20 piculs (each picul 133 ℔s. avoirdupois) of leaves. Thus you should weigh the leaves which are given to the worms, and be careful not to exceed the proper quantity.

On feeding (飼蠶) *the Worms.*

The leaves first given to the worms must be picked from the outside of the trees, and cut fine with a sharp knife; every time you cut the leaves, be sure to wash your hands. Let the leaves be renewed five or six times in the course of 24 hours, and when the leaves are done, give the worms a fresh supply. The leaves must not be too thick, but be spread about in a regular manner. As soon as you have given the worms their leaves, place them inside a curtain, to protect them from the wind and cold. Use the small silkworm frame, upon which the trays in which you put the silkworms must be well fitted, that the worms may get warmth. Do not on any account pile the trays one over the other, lest the worms generate damp and become sickly. In rearing silkworms, it is necessary to keep the temperature even; if it be too cold, they will be a longer time in coming to perfection; if too hot, they will become dry and shrivelled. When the weather is cold, you must not suddenly heat them, but gradually increase the warmth; neglecting which precaution, they will get the yellow sickness and become weak. So also when hot, you must not suddenly introduce cold air, but gradually open the windows; neglecting which advice, the worms will become white and die.

In hot weather, if the temperature be suddenly reduced, the worms will refuse to eat; in such case you must instantly warm them by means of a gentle fire, and raise the temperature, after which the appetite of the worms will return.

In rainy and cold weather, first make a little fire in the room, and then give the worms their leaves, which will prevent sickness. The mulberry leaves should be gathered at an early hour, or after sunset, for the worms dread both damp and heat. If they eat damp leaves, they will get the diarrhœa, become white, and die; if they feed on hot leaves, they will be troubled with constipation, their heads will become large and their tails small, and then, should they eat ever so much, they would fail to attain maturity or form cocoons.

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On diminishing their Food (斷 飼) *in order to expedite* (睡) *the Torpor of the Worms.*

It is necessary to expedite the sleeping of those worms that have not yet fallen into the state of torpor; for this purpose, observe when one-third or one-half of the worms have assumed a yellowish bright appearance, and diminish that proportion of leaves. The leaves also must be shred finer and thinner than usual, and the number of meals increased.

If two-thirds of the worms have become yellow, then reduce two-thirds of the leaves; let the leaves also be much thinner, and the meals more frequent.

When they have nearly all gone off into the torpid state, and there be still a few pale and white worms that have not yet fallen asleep, it would be better to reject them as irregular and sickly worms.

Take the torpid ones up gently and put them in a still place, when they will cease eating; after this, wait until they have generally revived, when you can supply them with food. If when only eight or nine tenths of them have got up, you forthwith supply them with food, they will arrive at maturity at unequal periods. It will not hurt them, however, to let them fast a little at the time of awaking, because, in the first place, their mouths are accustomed to eating, and they can the more speedily consume the leaves, and, secondly, because they easily increase in size when arrived at that stage. When the worms begin to revive from their torpor, they must not be roughly moved, because their skins are tender, and they easily sustain an injury; they also dread the wind more than before dozing, when their skins were tougher. After they have begun to eat again, do not cease giving them leaves; and if you keep on feeding them systematically, you will soon bring them into a regular state.

On removing the (起 底) *Excrement of the Worms.*

When the worms first come out, they must be removed from the tray once a day. For this purpose, some finely-cut green leaves are spread over them; upon these the worms will crawl and eat, seeing which, you must take the little nippers or chopsticks and raise the top layer of leaves with the worms upon it, then carefully gather the other layers that are underneath; this done, the residue and the excrementitious matter must be all thrown away.

After the second torpor the worms daily increase in size, and every time they are removed they must be put wider apart; in doing this you may use your fingers, and gently raise the upper layer with the worms upon it.

In giving the leaves for food, they must not be in the least coarse.

After the third torpor, should the weather be fine they may be taken out of doors, but not if it be windy. After the great torpor, in removing the excrements you may use the silkworm net, and, spreading it over the worms, with a few good leaves upon it, the worms will mount up, and when they have had two or three nibs, then let a couple of people remove the net over to an empty tray, and throw away the excrements and the fibres of the mulberry leaves, in order to prevent the sickness arising from damp or steam.

When the worms are fallen into the great sleep, put them into a broad tray. For every 3 lbs. weight of worms you must supply 100 lbs. of leaves; and they will produce 5 lbs. weight of cocoons, which will yield 8 oz. or 9 oz. of Raw Silk.

After the worms have slept, and are just about to eat again, for every portion of leaves that are reduced there will be a corresponding reduction in the quantity of Silk obtained. After the fourth torpid stage, should the weather be warm, they will arrive at maturity in five days; but should the weather be cold, it will take them seven days to arrive at the same stage. Then take up the more advanced worms, and put them on the bush; every time you take any up you must scatter leaves, which are called sh'ang-mâ-sang (上 馬 桑), the "mount horse leaves;" in half a day or a little more they will all have arrived at maturity.

Silkworms have either three or four periods of torpor; the treatment, however, is in both cases the same. The fourth period is the great torpor.

On putting the Worms (上 簇) *on the Bush.*

For bushes, or receptacles for spinning, use the straw of late-growing glutinous rice. Scrape off the outer rind of the straws, and bind them firmly round the middle; let the straws be about a foot and a half long, with both ends even. The place where these receptacles or bushes are put must be dry and airy; they must be elevated on bamboo or wooden frames, crossed with mats made of rushes, upon which must be placed the straw receptacles or bushes, arranged in order. Then take those worms which have arrived at perfection, and put them in a Canton-varnished tray, from which, after having washed your hands, spread them about the receptacles or bushes, neither too close nor too far apart. Should the weather be cold or rainy, place a fire under the rush frame, and heat them well; the warmer they are, the more easily will they be able to form the cocoons, and the more readily will the Silk be wound off. After five days you may select your cocoons, and, stripping away the waste Silk that surrounds them, you may wind off the threads; but do not let the worms get damp, which may impede the formation of the Silk.

Then follow some directions about sacrificing to the spirit that presides over the silkworm.

On the Summer (原蠶) *Silkworm.*

The yuêntsân (原蠶) are also called hēátsân (夏蠶), summer, or ûrhtsân (二蠶), second-crop, silkworms. The cultivation of these is not generally encouraged: first, because the rearing of them happens at a time when people are busy with their harvest, and it interferes with the business of agriculture; secondly, because when silkworms are abundant they affect the horses, the breed of which will not then be numerous—hence the ancient classics forbade the rearing of those worms; and, thirdly, because after the spring worms have been fed the mulberry leaves become scarce, and if you denude the trees of their leaves any further, you are likely to injure them, and spoil the next year's crop. But when the spring worms fail and the mulberry leaves are still plentiful, it is a good thing to fall back upon the summer worms to supply the deficiency. In rearing the second-crop worms, you must be uncommonly diligent in changing the trays and giving them leaves, when, after 21 or 22 days, they will arrive at maturity.

You must endeavour particularly to keep them from the attacks of the large flies, and prevent their being injured by heat; for while spring worms must be kept warm, summer worms must be cool.

On getting (收種) *proper Seed.*

The most important thing in rearing silkworms is the getting of proper seed. The worms that are intended to be reserved for seed should be nourished with double care.

From these select the best sort of worms, and give them extra feeding; when come to maturity, set apart those that appear most healthy and strong, just when they mount the bush. Five days after the cocoons are formed, pick out those that appear thickest and fullest upon the bush, and clear away the waste Silk from them. Let there be an equal number of males and females, the former are known by their being smaller, more tapering, and brisk, while the latter are to be ascertained by their being rounder, fuller, and more slow. Put the males and females on separate trays, and when their time is up, the moths will come forth of themselves; those that have stunted wings, bold eyebrows, scorched tails, as if yellow with smoke, or that have red bellies without hair, also those that come out either before or after the others, must all be rejected, keeping only the perfect and good: this is the way to secure good seed from the very first.

The moths come out generally from 3 to 6 o'clock in the morning; the conjunction takes place between 7 A.M. and 2 P.M., when their energies are exhausted; after that time it is better to remove the male moths, and arouse the female ones by a gentle tapping, that they may cleanse themselves from their dirt. Having previously pasted some thick sheets of paper stretched out on a plank, arrange the moths regularly on the card, that they may lay their eggs; those that are laid from 2 P.M. to 6 P.M. are reckoned good seed, but those subsequently laid are weak and useless. Having removed the female moths, hang up

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the card in an airy place until the seed becomes of a proper colour and consistency, when they should be washed in clean water and dried. After sprinkling some ashes over the cards, roll them up, and suspend them in an elevated place, where they will not be affected by damp or moisture; they must also be kept out of the way of smoke. In the beginning of autumn you can free them from the ashes; and in the middle of January take a decoction of mulberry leaves that has been left to cool, and steep them in it for a quarter of an hour, to strengthen their energies; after which you must dry them, and, having wrapped them up, suspend them in their former elevated position.

Twelve Rules for (繅 絲) *winding off the Silk.*

1st.—About a fortnight previously, put some river water into an old jar, and let it settle till it becomes clear. River water is better than spring water, and running than standing water. If you have not had time to let it settle, you can throw a handful or two of shells into the water to clear it for use; but beware of using alum.

2nd.—When you plaster your furnaces, you can plaster at the same time the bottom and sides of your pan. At the mouth of the pan the plastering should be about four fingers in thickness, gradually thinning towards the rim; wait until your pan is dry, and when you want to use it, fill it nearly full with water heated to a proper degree; for this purpose old pans are preferable. Formerly it was thought that cold pans were better than hot ones, but now people do not use cold ones. Once also it was recommended that there should be a board to divide the pan into two parts, that two people might wind together; but now this practice is discontinued. Burn dry wood under your furnace, and in order to try the heat, observe whether the chrysalides sink or swim: if they come to the surface of the water, reduce the heat; and if they sink, increase it. The degree of heat also must be regular.

3rd.—According to the old plan, the winding frame should be put by the side of the furnace, even with the pan; all the apparatus for winding should be placed on the right side of the furnace, as the most convenient for the performance of the operation; the reel should move easily, and be kept steady by means of a stone placed on it; but let not this interfere with the arms of the reel, the pins for fastening which should be knocked in repeatedly to make them firm.

4th.—When the water is warm, put in your cocoons, and stir them about a little with your hands, so that the cocoons whirl round; then search for the ends of the filaments, and, getting hold with the left hand of the coarse ends of the same, slightly jerk them several times on the surface of the water, and lift up the coarse ends of the threads, all below which is fine Silk; gently pluck off these coarse threads, then with one hand taking up the fine Silk, and with the other using a perforated ladle to keep the cocoons down in the water, wind the Silk upon a peg, to be ready for reeling.

5th.—When you have got a number of these filaments, put them together in separate lines upon the reel, and pass them through the little eyes that are fixed upon the board of the spool frame; after this, lead them over the rattling spools, where the threads are crossed and made to move along with the Silk to be drawn over the réel; this done, turn the reel with your foot. In putting the threads on, you must be careful to arrange them well, and put them through the little hooks, or rampins, until the Silk, being wound off the chrysalis, sinks. The cocoons in the Silk pool being now fewer, take some of the fine Silk threads from the peg, and add them on, taking care that the lines be of a regular thickness; and when you have wound off until the chrysalis appears, and the covering over it be as thin as paper, then disengage it, and do not let it break off of itself, lest you suddenly sever the line or soil the Silk.

6th.—Should the thread break in the middle and the cocoon be disengaged, you must endeavour to join it by taking up the separated cocoon, and, placing it on one side, look out for the clue, and then, getting hold of the end of the thread, draw it out and join it to the other.

7th.—In drying the Silk, use an old porcelain basin, and heat it over hot charcoal until all that is within the basin becomes perfectly dry; for if the Silk be damp, it will lose its gloss. The basin must be put at a little distance from the reel, lest the heat injure the Silk thereon. It must also be held slantwise, with the mouth turned outwards. One person should attend to this duty.

8th.—The oftener the hot water in which the cocoons are placed is changed the better; observe when it becomes a little foul, and then throw away about one-third of it, putting some clean warm water in its stead. This operation also should have someone to look after it.

9th.—The band that turns the machinery should be frequently wet, in order to keep it tight, that the different threads may be regular in winding, and not become irremediably ravelled; if the band be not tight, the rampin board also will easily get out of its place, which is called the disarrangement of the board.

10th.—The old method of getting the Silk off the reel was as follows: the frame of the reel being loosely tied together by means of hemp threads, in order to keep in the pins, and the small ends of the wooden pins being fixed in their places, a few smart blows with a hammer would disengage them, after which you may take the reel off the frame, with the cloth and the Silk that were upon it.

11th.—There are various methods of managing the cocoons. In some the clues are blown about by the wind; these, after being put on the wheel, break in a turn or two, in which case it will be necessary to increase the fire, and work with boiling water. There are some filaments that blend in the raw state, and are no sooner on the reel than they get together in knobs; in which case you should avoid cold water, and use warm. There are some, again, that blend only when matured, and when they have been half wound, suddenly come off; these should be removed. There are some filaments that both float about and yet easily blend: if the water be hot, then they blend into knobs; and if cold, then they float about. Sometimes we meet with cocoons of the yâytsân (野蠶), wild silkworm, which must first be well dried and then thoroughly boiled, when you can get hold of the clues. Put the cocoons of one whole bush into the boiler together, and wind them off; as soon as you have wound them half off, take the cocoons of another bush and join on to the former. You have no need to make the water in the pan very hot, it only requires to be lukewarm.

Rule 12th refers to some superstitious observances not worth recording.

Four Rules inculcated at the Silk Establishment of Tantoo (丹徒), *in Chinkiang-fu.*

1st. On planting the Mulberry.—It is necessary to have your mulberries grafted, which grafts come to perfection in three years; it is better to use those scions which have been grafted in Hoochow, by which much trouble will be spared. About the beginning of January in each year, employ an experienced planter of mulberries from Leĕhyâng (溧陽), near Nanking, to go to Hoochow and buy your plants, making a bargain with him to pay only for such as live.

2nd. On feeding the Worms.—The year after your grafted plants have come to perfection, hire a silkworm feedster from Leĕhyâng, who will teach girls of 15 and under to feed the worms.

3rd. On hiring Ground.—Make your agreement for 10 years, paying the rent every year. On each mow (or sixth of an acre) you may plant 40 trees; after two years, every tree will produce 30 catties of leaves; the leaves of five trees, or 150 catties, given to the worms, will produce 1 catty of Silk; thus each mow will produce 8 catties of Silk, which, if woven, will make 20 small pieces of Silk-stuff, value $50; this, deducting half for the hire of the ground and the labour and food of workpeople, will yield a tolerable profit.

4th. Plan for raising the Money.—Having a number of tickets drawn out by some respectable man, let each one get his relations and friends to advance the money, no matter how much, and give them

SILK.

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tickets from the establishment for the amount. After three years, when the proceeds are realised, pay off the principal and interest, at the rate of 10 per cent. per annum, with 3 per cent. on the interest, for the three years. When the women of the establishment are willing to lend to the concern such moneys as may be over and above what they need for their support, give them a memorandum of the same, and pay them every month, at the rate of 15 per cent. per annum interest, besides refunding the capital at the end of three years. Should the officers subscribe anything, pay them also according to the amount, when the term is expired.

Twelve more Rules regarding a Silk Establishment.

1st. As to the Fence.—According to the old books on agriculture, in the winter months you should plant long twigs of willow and ash mixed, and set very closely together; when they have begun to grow, bend them down on either side, and plait them together crosswise, binding them with the fibres of the coir palm; outside of the hedge thus formed, plant sour dates, small oranges, thorns, briars, etc. The more prickly the plants are the better.

2nd. On setting up a Sign.—On the sign let there be written in large characters "an establishment for the encouragement of Silk cultivation." Beg also of the local officers to issue out a notice forbidding idle people to tread down the plants.

3rd. On opening out a Sluice.—If you can lead in the river water to irrigate your field, you will save the expense of digging wells, while at the same time you can breed fish and keep ducks in your canal, or cultivate the water-lily, water-caltrops, water-cresses, water-chestnuts, etc.

4th. On Manure.—In the winter months you must nourish the roots of your plants, for which purpose make use of rotten fish preserved in jars, or the juices of decomposed vegetables.

5th. On planting Fruit Trees.—In the fourth month plant your mulberries; in the winter, loosen and water the earth round the plants; and then in the spring, they will shoot out new branches. In the following year, besides gathering your mulberry leaves, should there be any vacant ground, you can plant it with fruit trees, such as arbutes, pomegranates, apricots, or pears.

6th. On cultivating Vegetables.—Beneath the mulberries you can plant onions, leeks, and melons, or potatoes and yams. Select those that need most frequent irrigation, and then the mulberry leaves will be the more plentiful. In order to prevent the locusts from eating the mulberry leaves, you may plant the more yams.

7th. On medicinal Herbs.—Withered mulberry leaves, the parasites of the mulberry, together with white and diseased silkworms, may all be used as medicine; but the snails found on the mulberry must be carefully caught, lest they injure the leaves.

8th. On using the Wood for Timber.—The mulberry trees useful for feeding silkworms are generally saplings; some persons, however, allow the trees to grow large for the sake of the timber, of which various articles may be made. Various descriptions of mulberry-wood are mentioned, all of which are useful.

9th. On growing Bamboos.—On the establishment there is need of ladders, tables, and sieves, all of which are made of bamboo; hence the necessity of cultivating that plant.

10th. On feeding Goats.—The leaves of the old mulberries are good for fattening goats, and goat's dung is good for feeding fish; hence goats may be kept with advantage.

11th. On dividing the Establishment.—When the resources of an establishment are abundant, others may be set up, in order to extend the cultivation.

12th. On Amity amongst Neighbours.—After the mulberries are planted, there will be an abundance of young plants, and should neighbouring farmers wish to increase their number of trees, or any scions

be needed for public use, you may allow people to come to your ground and take a few young plants gratuitously. You can also keep on hand a few copies of a work on the Silk cultivation, which you can distribute to such as need them.

In all matters, sparing and economical plans should be pursued; thus, in the Silk culture it will be sufficient to have one principal planter of the mulberries and one chief rearer of silkworms, which will obviate the necessity of referring to pictures and representations. With regard to plans for raising the money, let all the labourers who contribute have a share in the profits, and not be necessitated to set their money out to interest elsewhere; thus your applications for assistance will always meet with a ready response.

As to hiring ground, you can make trial of any vacant land that may happen to be uncultivated, and then you will not be blamed for hindering the production of the necessaries of life.

The above directions were published at an establishment in Chinkiang-fu, and in two years the undertaking became very prosperous.

FOOCHOW.

No. 175.

CUSTOM HOUSE,
FOOCHOW, *25th October* 1880.

SIR,

IN accordance with the terms of the instructions contained in your Circular No. 103, Second Series, of the 10th May 1880:

Silk culture in China: reports upon, called for:

I have now the honour to inform you—

1°.—That the Commissioners of the Formosan ports, Tamsui and Takow, report that neither Silk culture nor manufacture exists in their respective districts.

2°.—That, acting in concert with Mr. WOODRUFF, Commissioner at Amoy, it was agreed that that gentleman should address you with regard to Silk production of the prefectures of Hsinghua (興化府), Ch'uanchow (泉州府), Changchow (漳州府), and Tingchow (汀州府), and the departments of Yungch'un (永春州) and Lungyen (龍巖州), whilst I should confine myself to the remaining prefectures of the Fukien province, viz., Yenping (延平府), Chienning (建甯府), Shaowu (邵武府), Funing (福甯府), and Foochow (福州府).

3°.—I have instituted very careful inquiries, through various channels, including the Roman Catholic bishop of the province, Monseigneur GENTILI; but my informants have been unanimous in replying that, of the above, Foochow alone produces or manufactures any Silk. The following Report has reference, therefore, exclusively to that prefecture.

4°.—About the year 1866, His Excellency TSO TSUNGTANG (左宗棠), then Governor-General of Fukien and Chêhkiang, endeavoured to introduce the cultivation of both mulberry and cotton; he caused large premises to be built in one of the suburbs, and established an office in the city of Foochow, called the Sangmien-chü (桑棉局), with the intention of fostering the new industries. The soil was soon proved to be quite unfit for cotton, so that that branch was early abandoned, but the mulberry trees thrived very fairly, and can be seen growing in this (閩縣) and the neighbouring district of Houkuan (侯官縣), the only places where they were planted. So great an interest was taken by the promoters of the project that the authorities offered, I am told, to purchase Native Raw Silk at an uniform price of 500 *cash* and re-sell it to the weavers at 350 *cash* per catty. Notwithstanding this protection, however, climatic or other causes were adverse to the nurture of the silkworms; those imported from Soochow only produced Silk once a year, whilst the filament spun by the Canton worm was so very coarse as to be only fit for making sieves, etc. At present the annual production of all kinds of Raw Silk is under 5 piculs, and I cannot find that it was ever much greater; its winding is

left entirely to the unskilled hands of children, and it is chiefly sold to the sieve manufacturers. The premises of the Sangmien-chü have been long empty, and are, it is said, to let.

5°.—Silk weaving, of Gauzes principally, is carried on to a fair extent in Foochow, from raw material brought hither from Shanghai, the value of which was in 1879, *Hk.Tls.* 48,181; a few Satins are also manufactured, but the inadequacy of the latter to supply the demand is shown from the fact that Silk Piece Goods worth *Hk.Tls.* 265,394 were imported during the same year.

6°.—I now proceed to answer your questions *seriatim:*

1°, three kinds of Raw Silk are produced here.

2°, the local names are Suchüngpah-si (蘇種白絲), Kuangchüngpah-si (廣種白絲), and Kuangchüngwong-si (廣種黃絲) respectively.

3°, the average amount of production of Raw Silk is from 4 piculs to 5 piculs, all from worms fed entirely on mulberry trees.

4°, the camphor-tree worm (樟蟲) is not a native of the mainland of this province; but as special attention has been directed to the subject, I subjoin a few particulars.

At certain seasons of the year the worms fall off the trees, and then only are they fit for use; they are immediately gathered, broken in two, dipped into vinegar, and have their intestines drawn out. The gut, miscalled Silk (絲) by the Chinese, is, after having been thoroughly dried in the air, used for fishing-lines. In Spain, the ordinary silkworm is subjected to an almost similar process for the same object; but there the worm is immersed in vinegar for at least 12 hours, which does not seem to be the case in China. The best quality comes from Hainan, and small quantities used formerly to be imported in junks for sale to the Liuchiu islanders at the high price of about $300 per picul. Tempted by this figure, a few piculs were, several years ago, collected and brought hither, overland, from the mountains of Kiangsi, but of such poor quality that it only realised $60 per picul; so the experiment was never repeated. For some time the trade with this port has ceased entirely, the Liuchiuans supplying themselves *viâ* Japan. These worms exist also, it is said, on the camphor trees in Formosa, but numbers are destroyed by birds, and none are collected.

I forward specimens of the Hainan and Kiangsi qualities.

5°, no Foreign machinery is employed here for reeling Silk.

6°, there are no regular establishments here for throwing Silks; but three private houses in the city and four in the suburbs are known, in which the residents reel a little.

7°, in the city and suburbs of Foochow there are 143 looms for Satins and Silk Piece Goods, and 220 solely employed in weaving Gauzes. The Silk used is, of course, mostly imported.

SILK.

FOOCHOW.

8°, the probable annual production of the prefecture of Foochow is—

1°, of Thrown Silk, 3 or 4 piculs;

2°, of Silk Piece Goods: *a*, Satins, 13,000 pieces; *b*, Gauzes, 100,000 pieces.

9°, the Taiping rebellion has not affected the Silk industries here.

10°, this portion of the Fukien province supplies no Silk fabrics suitable for the Imperial Court or rich families.

11°, I enclose a list of the samples forwarded, 18 in all; one series addressed to the Statistical Secretary, as directed, the other to the Commissioner of Customs, Shanghai, for transmission to you.

7°.—The cost of the Fukien collection, including $20 paid to the Amoy office, amounts to *Hk.Tls.* 16.6.2.

I placed the circular to which this despatch forms the reply in the hands of Mr. Second-Assistant AINSLIE, who has been for some time in charge of the Returns Department in this office. To him, therefore, and CHÊNGSHENG (鄭盛), weigher and daily appraiser of values, are due any credit there may be belonging to the matter of collection and preparation of the particulars now forwarded; while for my own part, and as in duty bound, I accept the responsibility in regard to their general accuracy.

The sum and outturn of the inquiries amount to this, that "Silk culture" does not exist in this part of the province of Fukien, except as a pastime for children in their play hours; while the "Silk manufacture" depends on Shanghai for the supply of the raw material.

I have, etc.,

C. HANNEN,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,

Inspector General of Customs,

PEKING.

ENCLOSURE No. 1.

LIST OF SAMPLES.

1°.—White cocoons, formed by silkworms originally introduced from Soochow.

2°.—White cocoons, from silkworms originally introduced from Canton.

3°.—Yellow cocoons, from silkworms originally introduced from Canton.

4°.—Fine white Silk, obtained from the Soochow cocoons (sample No. 1). Quantity produced annually, 120 catties; value, $420 per picul.

5°.—White Silk, obtained from the Canton white cocoon (sample No. 2). Annual production, 250 catties; value, $370 per picul.

6°.—Yellow Silk, obtained from the Canton yellow cocoon (sample No. 3). Quantity produced annually, 50 catties; value, $380 per picul.

7°.—Talêi-tuan (大累緞), locally, Tailwi-taung, is manufactured from imported Shanghai Silk, in pieces 34 feet in length; its value is 35 cents per foot. It is made into ornamental chair covers, and, when embroidered, theatrical and bridal costumes. Annual production, about 1,300 pieces.

8°.—Hanfu-tuan (漢府緞), locally, Hanghu-taung, is manufactured from Shanghai Silk; it is worth 10 cents per foot, and is chiefly made into dresses for the dead. Production, about 2,500 pieces, each 64 feet in length.

9°.—Hungch'ow (紅綢), locally, Engtiu, or red Pongee, is manufactured from Shanghai Silk. The production is about 1,100 pieces, each 20 feet in length, which are used for covering ornamental lanterns, ladies shoes, etc.; value, 11 cents per foot.

10°.—Chunghung-ch'ow (中紅綢), locally, Tungeng-tiu, or inferior red Pongee, is manufactured from Shanghai Silk, in lengths of 18 feet. It is used for flags, banners, etc. Annual production, about 8,000 pieces; value, 9 cents per foot.

11°.—Hsüehchuan-sha (雪串紗), locally, Siokch'eong-sa, or mauve-coloured Gauze, is manufactured from Shanghai Silk into pieces 50 feet long. The value is 25 cents per foot, and the annual production about 2,000 pieces. Summer dresses for both sexes are made from it.

12°.—Mienlo-sha (麪羅紗), locally, Mi'engl'o-sa, or flour-sieve Gauze, is woven from Native and Shanghai Silk; the value is 10 cents per foot, and it is employed largely in the manufacture of fine sieves; is also, when embroidered, made into purses for paper money, fanholders, etc. Annual production, about 15,000 pieces, each 10 feet in length.

13°.—Houchuan (厚絹), locally, Kaukiong, or thick lustring, woven from Shanghai white Silk, is used for covering lanterns; it is valued at 8 cents per foot, and about 6,000 pieces, each 40 feet in length, are manufactured annually.

14°.—Chiucha-tai (酒醡袋), locally, Chiuta-t'oi, or winepress bag, is woven from Shanghai Silk, in lengths of 30 feet. As its name implies, it is made into bags with which to express spirit in samshu manufactories. Value, 10 cents per foot. Annual production, 2,000 pieces.

15°.—Sailung-sha (篩籠紗), locally, Tailëng-sa, or sieve Gauze, is woven, in pieces 12 feet long, from Native and Shanghai Silk, and is employed in the manufacture of coarse sieves. Value, 6 cents per foot. Annual production, 12,000 pieces.

16°.—Têngsha (燈紗), locally, Tingsa, or lantern Gauze, woven from Shanghai Silk, is only used for covering lanterns. The value is 3 cents per foot, and the annual production 70,000 pieces, varying from 70 feet to 140 feet in length.

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FOOCHOW.

A.—Changch'ung-ssŭ (樟蟲絲), or gut of a worm found on camphor trees, was formerly imported from Hainan in junks. It is purchased by the Natives of the Liuchiu islands, who employ it for fishing lines, and it is worth $300 per picul.

B.—Changch'ung-ssŭ (樟蟲絲), a coarse quality of the last, comes from the province of Kiangsi. It is only worth $60 per picul.

NOTE.—1°. Values are given in Mexican dollars and cents.
2°. Samples of Silk Piece Goods are in original widths.
3°. 1 local foot = 11.7 English inches.

ENCLOSURE No. 2.

CHINESE NAMES OF SILK SAMPLES.

No.	MANDARIN PRONUNCIATION.	CHARACTERS.	LOCAL PRONUNCIATION.
1	Pai-su-ts'an-chien	白蘇蠶繭	Pah-su-chang-kieng.
2	Pai-kuang-ts'an-chien	白廣蠶繭	Pah-kwong-chang-kieng.
3	Huang-kuang-ts'an-chien	黃廣蠶繭	Wong-kwong-chang-kieng.
4	Su-chung-pai-ssŭ	蘇種白絲	Su-chung-pah-si.
5	Kuang-chung-pai-ssŭ	廣種白絲	Kwong-chung-pah-si.
6	Kuang-chung-huang-ssŭ	廣種黃絲	Kwong-chung-wong-si.
7	Talêi-tuan	大累緞	Tailwi-taung.
8	Hanfu-tuan	漢府緞	Hanghu-taung.
9	Hungch'ow	紅綢	Engtiu.
10	Chunghung-ch'ow	中紅綢	Tungeng-tiu.
11	Hsüehchuan-sha	雪串紗	Siokch'eong-sa.
12	Mienlo-sha	麵羅紗	Mi'engl'o-sa.
13	Houchuan	厚絹	Kaukiong.
14	Chiucha-tai	酒靹袋	Chiuta-t'oi.
15	Sailung-sha	篩籠紗	T'ailëng-sa.
16	Têngsha	燈紗	Tingsa.
A	Changch'ung-ssŭ	樟蟲絲	
B	Changch'ung-ssŭ	樟蟲絲	

TAMSUI.

No. 6.

CUSTOM HOUSE,
TAMSUI, *6th January* 1881.

SIR,

I BEG to acknowledge your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

and, in reply, to inform you that there is no Silk whatever grown in Northern Formosa.

I was under the impression that replies to your Circular were required from those ports only which had specimens of Silk to forward, and hence my neglect to send my Report at an earlier date.

Your Despatch No. 167 of the 10th December 1880, which has just reached me, reminds me that the Circular requires notice, and I lose no time therefore in answering it, trusting at the same time that the delay which has occurred in attending to its instructions has not caused any inconvenience at the Inspectorate.

I have, etc.,

WALTER LAY,
Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

TAKOW.

No. 7.
I. G.

CUSTOM HOUSE,
TAKOW, *8th January* 1881.

SIR,

I HAVE the honour to acknowledge the receipt of your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

and, in reply, to inform you that no Silk is produced or manufactured in the southern portion of the island of Formosa, and that therefore the queries contained in your Circular under reply have no reference to this office.

I have, etc.,

W. B. RUSSELL,
Assistant-in-Charge.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

AMOY.

No. 112.

CUSTOM HOUSE,
AMOY, *27th August* 1880.

SIR,

IN reply to your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

I beg to make the following report.

By arrangement with Commissioner HANNEN at Foochow, I have taken as our field for inquiry the two southern circuits of this province, consisting of the departments of Hsinghua-fu (興化府), Chüanchow-fu (泉州府), Yungch'un-chow (永春州); and Changchow-fu (漳州府), T'ingchow-fu (汀州府), Lungyen-chow (龍巖州) respectively.

Although the Red Book names Raw Silk as well as Velvet among the productions of Hsinghua-fu, I learn from the Taotai, and from other sources, that Raw Silk is not produced in this part of the province in appreciable quantities; that the only manufactures of any importance are in Changchow-fu; and that the Raw Silk used in these is imported from other provinces. I have accordingly sent a messenger into Changchow-fu to obtain all the information possible; and give the results below. The total cost of the inquiry, including the purchase of specimens, is $20. The burden of the work has perhaps fallen most heavily on Mr. Principal Clerk LIM CHINGUAN.

1°.—With the exception of a few cocoons used as toys, from silkworms reared for amusement, no Raw Silk is produced in our departments. The Raw Silk used in manufactures is imported from the provinces of Kiangsu, Chêhkiang, and Kwangtung, chiefly by nine establishments in Changchow-fu.

2°.—No Raw Silk is produced.

3°.—No Raw Silk is produced.

4°.—No Silk of the kinds described is obtained in our departments.

5°.—No establishments where Foreign machinery is used to reel Silk have been started in our departments.

6°.—There are 249 Native establishments to make Thrown Silks in Changchow-fu.

7°.—In Changchow-fu, chiefly in the capital, its suburbs, and the neighbouring villages, there are said to be some 250 looms.

SILK.
AMOY.

8°.—The probable production of Thrown Silk has not been ascertained; of Silk Piece Goods it is approximately as follows:—

140 looms, each annually	40	pieces	Silk and cotton mixtures,	20	taels	weight	=	*Piculs*	70
48	„	„	„	25	„	Crape	28	„	„	=	„	21
59	„	„	„	28	„	Gauze	14	„	„	=	„	14.45
						TOTAL					*Piculs*	105.45

This is all in Changchow-fu, where, in addition, there are 74 establishments for making Silk thread; six for making Gauze official dresses; two looms, making Velvet chair covers, cushions, screens, pillows, etc., to an annual value of about $900; and an annual production of about 50 pieces of collar Velvet, each 19 feet long, valued at over *Tls.* 200.

9°.—It is said that since the Taiping insurrection the quality of the Silks manufactured has been improved. The same establishments have been restored at the same places, with an addition of about 20 looms.

10°.—Velvet is manufactured in Changchow-fu for the Imperial Court.

11°.—The following samples are sent herewith: 1, cocoon; 2, white Silk; 3, yellow silk; 4, Silk floss; 5, red Silk thread; 6, Silk and cotton mixture; 7, Silk Crape; 8, Gauze; 9, Velvet. After a careful search by the messenger, no other varieties could be obtained.

In conclusion, I should say that, although time and effort have been given to the inquiry, owing to the difficulty of obtaining information, the results are less satisfactory than could be desired; and too much confidence should not be felt in the accuracy of the Report.

I have, etc.,

F. E. WOODRUFF,

Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

No. 161.

CUSTOM HOUSE,
AMOY, *8th November* 1880.

SIR,

I DEEPLY regret to have to put on record the fact that, through an oversight of my own, the specimens called for in your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

have not been sent to the Statistical Department until to-day. I am happy to believe, however, that this has caused no delay.

The set for yourself was sent with my Report, Despatch No. 112, of 28th August 1880, as by the enclosed list, in which the wording of the label of specimen No. 1 may differ from that given you.

I have, etc.,

F. E. WOODRUFF,
Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

SILK.

AMOY.

ENCLOSURE.

SILK CULTURE IN SOUTHERN FUKIEN: LIST OF SPECIMENS.

No. 1.—Cocoon (繭) (imperfect). Produced in Changchow-fu. Used as toys by children.

No. 2.—White Silk (白絲). Produced in Kwangtung, Soochow (Kiangsu), or Hangchow (Chêhkiang). Used in manufacture of Silk Piece Goods, Silk thread, etc. Price, Tls. 0.2.0.0 per tael.

No. 3.—Yellow Silk (黃絲). Produced in Kwangtung, Soochow (Kiangsu), or Hangchow (Chêhkiang). Used in manufacture of Silk Piece Goods, Silk thread, etc. Price, Tls. 0.2.0.0 per tael.

No. 4.—Silk floss (four colours) (絨線). Produced in Changchow-fu. Used in manufacture of Silk thread and embroidery. Price, Tls. 0.3.2.0 per tael.

No. 5.—Red Silk thread (紅絲線). Manufactured in Changchow-fu. Used for cap tassels and tying the hair. Made from Silk imported from Kwangtung, Soochow (Kiangsu), or Hangchow (Chêhkiang). Price, Tls. 0.4.5.0 per tael.

No. 6.—Silk and cotton mixture (絲布). Manufactured in Changchow-fu. Used for clothing. Made from Silk imported from Kwangtung, Soochow (Kiangsu), or Hangchow (Chêhkiang), and cotton imported from Shanghai or the Straits Settlements. Price, Tls. 2.8.0.0 per piece of $5\frac{6}{10}$ chang in length and 1 foot 6 inches in width.

No. 7.—Silk Crape (縐紗). Manufactured in Changchow-fu. Used for clothing. Made from Silk imported from Kwangtung, Soochow (Kiangsu), or Hangchow (Chêhkiang). Price, Tls. 7.2.0.0 per piece of $5\frac{6}{10}$ chang in length and 1 foot 7 inches in width.

No. 8.—Gauze (black and white) (紗). Manufactured in Changchow-fu. Used for clothing. Made from Silk imported from Kwangtung, Soochow (Kiangsu), or Hangchow (Chêhkiang). Price, Tls. 4.4.0.0 per piece of $5\frac{2}{10}$ chang in length and 1 foot $5\frac{1}{2}$ inches in width.

No. 9.—Velvet (剪絨). Manufactured in Changchow-fu. Used for collars. Made from Silk imported from Kwangtung, Soochow (Kiangsu), or Hangchow (Chêhkiang). Price, Tls. 4.4.0.0 per piece of $1\frac{9}{10}$ chang in length and 2 feet 7 inches in width.

SWATOW.

No. 131.
1880.

CUSTOM HOUSE,
SWATOW, *25th September* 1880.

SIR,

IN reply to Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

I have the honour to report:—

1°.—No Silk whatever is produced in the three prefectures of Hweichow (惠州), Chaochow (潮州), and Kieyang (揭陽), for whose products this port is the outlet.

Several attempts were made to rear silkworms, I am told, but they all failed, the climate proving unfavourable, and the mulberry leaves of bad quality.

As an amusement, however, eggs are occasionally imported, and the worms reared at home in the families; but they are as a rule very weak, most of them die before their time, and the others cannot even form into cocoons. They are placed in due time each upon a small piece of paper, around which they make their thread, the result being a little mass of broken silk about 4 inches square, and very thin, which is generally employed to make little toys for children, but which, being very light, warm, and resisting, is sometimes used to stuff (or line) small articles of Silk clothing. It cannot become an article of trade owing to its scarcity and cost.

2°.—I append herewith a table giving the quantities of Raw Silk imported at Swatow during the last 10 years. It shows that about 139 piculs, on an average, have been imported yearly. Of this only a small percentage, and of the most common kind, is made into thread in this prefecture at Anpu (安埠) and Nanyang-hsiang (南陽鄉), being chiefly used for braiding with the Chinese queues; the remainder is sent to the Silk-manufacturing district of the Changchow (漳州) prefecture, in the province of Fukien.

I am sending a copy of this despatch to the Canton Commissioner for his information.

I have, etc.,

A. HUBER,
Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

ENCLOSURE.

IMPORT OF RAW SILK AT SWATOW DURING THE LAST 10 YEARS.

FROM WHAT PLACE.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	TOTAL.
	SILK, RAW, FINE.										
	Piculs.	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*	*Piculs.*
Hongkong	10.23	171.22	39.10	51.68	31.83	...	17.25	7.36	4.30	8.54	
Chinese Ports	...	...	...	...	2.22	...	0.93	1.14	2.55	0.77	
TOTAL	10.23	171.22	39.10	51.68	34.05	...	18.18	8.50	6.85	9.31	349.12
	SILK, RAW, WILD.										
Hongkong	...	...	...	...	...	30.09	19.68	102.35	7.39	...	
Chinese Ports	...	...	...	...	...	0.18	...	...	...	...	
TOTAL	...	...	...	...	...	30.27	19.68	102.35	7.39	...	159.69
	SILK, YELLOW, NATIVE.										
Hongkong	...	...	28.68	121.81	24.99	13.69	27.07	...	...	20.77	
Chinese Ports	...	...	18.27	3.19	5.75	...	12.41	91.77	...	22.66	
TOTAL	...	...	46.95	125	30.74	13.69	39.48	91.77	...	43.43	391.06
	SILK, YELLOW, FOREIGN.										
Hongkong	...	...	9.44	15.94	17.91	77.02	58.12	71.95	105.58	83.03	
Foreign Countries	12.14	...	15.72	10.70	15.32	...	...	...	0.62	...	
TOTAL	12.14	...	25.16	26.64	33.23	77.02	58.12	71.95	106.20	83.03	493.49
										GRAND TOTAL.....*Piculs*	1,393.36

CANTON.

No. 156.

CUSTOM HOUSE,
CANTON, 30*th October* 1880.

SIR,

IN compliance with the instructions of your Circular No. 103, Second Series, of 10th May 1880:

Silk culture in China: reports upon, called for:

I have now the honour to forward a Report from Canton, drawn up by Mr. Deputy-Commissioner PORTER, accompanying which are three sub-enclosures, being a comparative table relating to the export of Silk and Silk Piece Goods between 1870 and 1879; Table No. III of the Annual Returns, Part II of 1879, showing the Silk export of 1879; and a copy of a résumé on Canton sericulture published by Messrs. ARNHOLD, KARBERG, & Co., of Canton.

The specimens have been prepared in duplicate, and, as instructed, one set is being sent to you and the other set to the Statistical Department.

I have, etc.,

E. McKEAN,
Commissioner of Customs.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

SILK.
CANTON.

ENCLOSURE.

REPORT ON SILK CULTURE IN THE CANTON CUSTOMS DISTRICT.

WITH reference to Circular No. 103, Second Series:

Silk culture in China: reports upon, called for:

the following particulars have been collected, and are set forth in the order required by the Inspector General's instructions, viz., to answer *seriatim* each question enunciated by Monsieur RONDOT *re* the production and manufacture of Silks in this province.

1°.—What kind of Raw Silk is produced—

1°, in the province where your (this) office is situated?

Raw Silk of all kinds from steam filature Silk of 9–12, 11–13, 12–14, 15–16 deniers, to Tsatlee of 20 deniers to 50 deniers, and long reeled Silk (without any cross in the reeling) of from 25 deniers to 50 deniers; and these are exported to all parts except America. Raw Silk, both long and short reel, are re-reeled for shipment to America. The Raw Silk called "Matau" is reeled from double cocoons, and is mostly shipped to Bombay. The Raw Silk called by Foreigners "Punjum" is reeled from the outer skin of the cocoons, and is exported chiefly to Europe and Bombay. Waste Silk, *i.e.*, refuse, is of various kinds, namely, steam filature waste, re-reel waste, "Gum," *i.e.* Raw Silk waste, "Punjum" waste, and the waste from Thrown Silk; these are shipped to Europe. Pierced cocoons (cocoons from which the worm has escaped) are also shipped to Europe; unpierced cocoons very seldom.

The Silk produced in the province of Kwangtung is from silkworms feeding on mulberry leaves only. There are two sorts of silkworms: the Taysaam, or large worms; and the Lunyueh, literally, monthly turns, "Poly voltin," as the eggs are reproduced almost every month. Hence the seven successive crops, which yield in the aggregate a quantity out of proportion to the small extent of the Canton Silk-growing districts.

2°, in the provinces or districts where there is no port open to Foreign trade, but with which the province mentioned above holds commercial intercourse?

This query, relative to this port, signifies the adjoining province of Kwangsi, and the reply to it is *nil*, there being no sericulture in that province.

2°.—What are the names given to the various kinds of Raw Silk? SILK.

Kwangtung Silk is named after the places from whence it comes. The principal localities are— CANTON.

1. Kolngon	葛岸	13. Lungtam	龍潭
2. Shuit'ang	水簜	14. Yungk'i	容奇
3. Hangt'au	杏頭	15. Kwaichow	桂州
4. Shat'au	沙頭	16. Hangt'an	杏壇
5. Lungkong	龍江	17. Mahang	馬坑
6. Lungshan	龍山	18. Kongmi	江尾
7. Kaukong	九江	19. Makts'ün	麥村
8. Komchuk	甘竹	20. Suilam	小欖
9. Laklau	勒樓	21. Kuchan	古鎮
10. Taiman	大晚	22. Shuihing	肇慶
11. Wonglin	黃連	23. Sainam	西南
12. Yeungngak	羊額	24. Saitsui	西樵

Some of these produce only Tsatlee, and others only hong reels. The majority, however, produce both kinds. A small quantity of Silk from wild cocoons is produced in the Shuntak (順德) district at Hangt'an—about 1 picul per annum. In the prefecture of Kiaying-chao, wild cocoons are reeled into Silk, with which they make a sort of cloth called Kanchow (*see* muster No. 181), but there are no statistics about the production, and it is said that these cocoons really come from the province of Szechwan.

3°.—What is the average production of the Raw Silk given—

1°, by the worms fed with mulberry leaves?

The average production of Raw Silk may be stated as follows:—Exported to Europe, 12,000 bales to 14,000 bales, of 80 catties each; to Bombay, 3,000 piculs to 4,000 piculs; to America, 10,000 boxes, of 75 catties; and produced for Native use, 20,000 piculs.

2°, by the worms fed with ailanthus leaves?

Nil.

3°, by the worms fed with oak-tree leaves, or on oak trees?

Nil.

4°, by the wild worms fed on mulberry trees?

Nil.

4°.—It is said Silk is obtained—

1°, from the cocoons of a large worm (Attams Atlas?) living in the Lofou Hills;

2°, from the reticular cocoon of a worm fed on the camphor tree.

The only kind of wild Raw Silk produced in the province is reeled from the cocoon of a caterpillar which feeds upon the leaves of the camphor and other kindred trees. This worm is not confined to the Lofou Hills, but is found all over the province, nowhere, however, very abundantly. It is not cultivated in any way, and only a very small quantity of

SILK. CANTON.

Silk is reeled from the cocoons—about 1 or 2 piculs; and none is exported. There is, in fact, no wild Raw Silk exported, all the various kinds of Silk and Silk Piece Goods sent from this port being produced from the cocoons of the cultivated worm fed on mulberry leaves. The chief use to which the above camphor-tree worm is put is to make "gut" for fishing-lines and the strings of musical instruments (*see* muster No. 182), for which purpose the Chinese consider it to be superior to the mulberry silkworm. The worm is called by the Chinese T'intsan.

5°.—How many, where, have establishments where Foreign machinery is used to reel Silk been started in Kwangtung?

Establishments for reeling Silk on the European plan exist in the Canton district. The first was started about 10 years ago, two years later four others were established, and now there are in all 10, with a total of 2,400 bassines, producing 1,200 bales, of 950 piculs to 1,000 piculs.

6°.—How many, where, do Native establishments to make Thrown Silks exist in Kwangtung?

Thrown Silk is made chiefly in Canton and Fatshan. A small quantity is exported to Manila.

7°.—How many, where, do Silk-weaving looms exist in China?

8°.—What is the probable production in each province—

1°, of Thrown Silk; and

2°, of Silk Piece Goods?

To these two queries this office can furnish no reliable statistical information, and it has no means of ascertaining trustworthy records on these heads.

9°.—Has the Taiping insurrection done any harm to the quality of Silk manufactures, etc.?

Not in this province, as the rebellion did not extend so far south.

10°.—What are the places where Silk manufactures for the Imperial Court and rich families are made at the present time?

Hangchow (杭州), Nanking (南京), and Soochow (蘇州).

11°.—What are the Silk Piece Goods of a manufacture special to Kwangtung little known in Europe?

To this question this office has done all it can to obtain a satisfactory answer, and in spite of the fact that the most competent persons in the Silk trade have been applied to for information, they are, one and all, unable to throw any light on this head. From Canton the quantity of Silk Piece Goods exported annually exceeds 5,000 piculs in weight, and is over *Tls.* 4,000,000 in value. These goods are shipped from Canton to Hongkong, and from thence are re-exported to various "eastern" and other countries; but what kinds and what proportion of the whole find their way to Europe, I am quite unable to ascertain. The 181 specimen musters that accompany this report of the Silk manufactures of this province, comprising Silk Camlets, Pongees, Crapes, striped Silks, Gauzes, Silk and cotton mixtures, and cocoon Silks, will enable those to whom they are submitted in Lyons to select such goods as are already known in Europe, and no doubt

experts will discover at a glance if the importation of any of the remainder would be likely to result advantageously.

Over 100 samples of ribbons manufactured in this city are forwarded. The export of these through this office is about 2,000 piculs a year, and the value about *Hk.Tls.* 1,000,000 (7,100,000 francs). Somewhere about a tenth of the whole is exported to Hongkong, and this quantity finds its way probably to other Foreign countries, chiefly the Straits Settlements; the balance is re-exported to Chinese ports. In addition to the above, there are 13 musters of Raw Silk, four of wild raw, and two of waste; also one sample of cocoons, and one of pierced cocoons. Duplicates of the whole of these specimens are being sent to-day to the Statistical Department.

Enclosed is a copy from our Annual Returns of a comparative table relating to the export of Silk and Silk Piece Goods between 1870 and 1879, and an extract from Part II, Table No. III, 1879, showing the Silk exports for last season.

Also are enclosed extracts from an interesting résumé published by Messrs. ARNHOLD, KARBERG, & Co., of this place, on "Canton Sericulture."

I have, etc.,

J. PORTER,

Deputy Commissioner of Customs.

SILK.

CANTON.

SUB-ENCLOSURE No. 1.

COMPARATIVE STATEMENT of the EXPORT of SILK from CANTON for the Years 1870 to 1879.

DESCRIPTION.	CLASSIFIER OF QUANTITY.	1870.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.
Silk, Raw and Thrown	*Piculs*	15,535	16,772	18,319	13,726	12,934	18,419	17,036	14,619	12,689	16,362
„ Wild Raw (Punjums)*	„	3,022	3,175	1,157	7,288	6,389	5,515	1,748	2,364	3,200	3,531
„ Refuse	„	2,863	4,740	3,590	5,517	4,304	4,104	4,554	4,244	5,891	7,660
„ Cocoons	„	1,727	1,930	2,145	2,236	781	978	1,760	758	1,145	2,001
„ Piece Goods.....	„	4,260	4,978	5,336	5,052	5,586	6,042	4,789	5,544	5,726	5,872
„ Ribbons and Sashes.....	„	930	1,102	1,047	1,283	1,260	1,523	1,249	1,167	1,226	1,863

SUB-ENCLOSURE No. 2.

TRADE in NATIVE SILK.—EXPORTS and RE-EXPORTS from CANTON for the Year 1879.

DESCRIPTION.	CLASSIFIER OF QUANTITY.	EXPORTS TO FOREIGN COUNTRIES.		EXPORTS TO HONGKONG.		EXPORTS TO CHINESE PORTS.		TOTAL RE-EXPORTS TO FOREIGN COUNTRIES, HONGKONG, AND CHINESE PORTS.		TOTAL EXPORTS *(including Re-exports).*	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			Hk.Tls.		*Hk.Tls.*		*Hk.Tls.*		*Hk.Tls.*		*Hk.Tls.*
Silk, Fine Raw	*Piculs*	...	...	16,232.42	4,233,829	1.06	281	66.35	17,961	16,299.83	4,252,071
„ Yellow, from Szechwan	„	...	...	...	...	...	...	31.54	8,412	31.54	8,412
„ Thrown.....	„	...	...	128.33	43,155	...	...	...	...	128.33	43,155
„ Refuse	„	1,200	46,800	6,460.32	230,501	...	...	...	...	7,660.32	277,301
„ Wild Raw (properly Punjums)*.....	„	109.35	9,842	3,421.76	289,921	...	...	342.85	27,559	3,873.96	327,322
„ Cocoons.....	„	22.50	1,170	1,978.54	93,308	...	...	...	...	2,001.04	94,478
„ Piece Goods	„	0.64	476	5,293.98	3,896,720	577.46	424,718	...	...	5,872.08	4,321,914
„ „ „ Szechwan and Shantung	„	...	...	...	...	...	...	2.87	514	2.87	514
„ & Cotton Mixtures	„	...	...	139.98	37,306	54.66	14,616	...	...	194.64	51,922
„ „ „ Fancy	„	...	...	0.57	111	145.62	21,650	...	...	146.19	21,761
„ Ribbons and Sashes.....	„	...	...	186.39	90,682	1,676.83	815,482	...	...	1,863.22	906,164
„ Fish-lines.....	„	...	...	4.58	798	...	...	...	...	4.58	798
„ Floss, Canton.....	„	...	...	46.27	18,889	4.16	1,752	...	...	50.43	20,641
„ „ other provinces ...	„	...	...	6.76	2,867	83.02	35,265	...	...	89.78	38,132
„ Tassels	„	...	...	0.49	157	16.99	5,437	...	...	17.48	5,594
„ Thread.....	„	0.16	53	255.10	85,957	16.35	5,531	...	...	271.61	91,541
„ Refuse, Cord of	„	...	...	...	...	37.41	3,174	...	...	37.41	3,174
„ Caps	*Pieces*	...	...	3,316	530	2	2	...	...	3,318	532

* Punjums are the fluff and outer coating of the genuine mulberry cocoons spun by hand into yarns before the true Silk thread is reached. More strictly speaking, Punjums are a sort of waste Silk ; and Wild Raw is a misnomer.

SUB-ENCLOSURE No. 3.

SÉRICULTURE DE CANTON.

Il y a en Chine tant de différentes qualités de vers à soie qu'il nous serait beaucoup trop long de les énumérer toutes, aussi nous nous contenterons de nous occuper des deux principales qualités: Tay-zam et Lun-jut.

La première éclot une fois ou, comme on le verra plus loin, deux fois par an; la seconde sert aux Chinois pour toutes leurs récoltes, qui sont en Chine au nombre de sept.

Au commencement du mois de Février, on met les graines à l'éclosion, et les cocons produits servent à faire des nouvelles graines; cette récolte, que les Chinois appellent "la récolte du grand-père," ne produit pas de Soie. Les graines sont immédiatement remises à l'éclosion et sans autre procédé éclosent de nouveau. La récolte est appelée "père" ou "la récolte du Tay-zam." On garde une partie des cocons "Tay-zam" pour faire de la graine, qui est réservée pour l'année suivante, mais la plus grande partie est filée; la Soie en est magnifique, d'un beau brillant, d'une belle nature, quoiqu'un peu ferme. Les cocons de "Tay-zam" sont plus grands et ont plus de Soie que ceux de "Lun-jut," un peu dans le genre des annuels japonnais. Malheureusement, la graine en est si sensible que ce serait porter de sérieuses atteintes à la race que de la faire reproduire comme les "Lun-jut."

On fabrique très peu de Soie avec cette récolte "Lun-jut"; on les fait encore grainer une fois, et le produit de cette semence est "l'enfant ou première récolte." Une partie de cette graine est mise de côté pour l'année suivante, l'autre sert à la seconde récolte, la reproduction de celle-ci à la troisième et ainsi de suite jusqu'à la septième, celle-ci ni sert pas à faire des semences. Il est nécessaire de laver les graines avec de l'eau tempérée, pour amener l'éclosion qui se produit au bout de huit jours, excepté pourtant pour les récoltes du "grand-père," du "père" et de "l'enfant," qui éclosent seules. Avant que l'éclosion se produise, on place sur les cartons quelques feuilles de mûrier, afin que le ver puisse trouver de suite sa nourriture. On réunit ensuite ces feuilles chargées de vers et on les place sur des cannisses. À cette époque il suffit de leur donner à manger de deux à trois fois par jour. Les vers mangent très bien pendant une huitaine de jours, puis survient une sorte d'abattement, pendant lequel, tendant la tête en l'air, ils restent presque immobiles durant 24 heures. C'est ce qu'on appelle sommeil ou mue, car après chaque sommeil les vers changent de peau. La température a une grande influence sur la durée du sommeil, ainsi que sur le temps qu'ils mettent à s'endormir. Avec un froid vif, ils restent quelquefois 10 jours avant de tomber dans cette sorte de léthargie, et quelquefois alors ce sommeil dure quatre ou cinq jours au lieu de 24 heures. En général les vers sont plus vigoreux quand il fait froid, mais on doit avoir grand soin que la feuille qui leur est donnée soit bien sèche, et qu'elle n'ait pas souffert de la gelée blanche. Les vers dorment en tout quatre fois à des intervalles de huit jours. Sortis de la troisième et surtout de la quatrième mue, les vers mangent énormément, et le bruit qu'ils font alors est très curieux; on croirait entendre une pluie torrentielle en entrant dans une magnanerie. Quand les vers approchent du moment où ils vont rendre leur Soie, ils deviennent très clairs et transparents, et environ six jours après la quatrième mue, ils sont prêts à faire leurs cocons; on les mets alors sur les cadres à cellules, fabriqués en bamboo.

Ce système diffère beaucoup des bruyères employées en Europe, mais quoique causant un peu plus de peine, il n'en est pas moins très pratique, car il prévient des doubles dont la quantité est plus petite; on considère la quantité des doubles assez forte à $1\frac{1}{2}$ à 2 pour cent.

Le ver travaille au cocon 24 à 30 heures, et trois jours après, le papillon sort en perçant le côté pointu. Il fait sa graine en un jour, au bout duquel on le jette; cette graine, lavée comme nous l'avons dit plus

SILK.

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haut, éclot au bout de huit jours et les mêmes phénomènes se répètent. L'éducation des vers à soie se fait pendant toute l'année, et les personnes qui s'en occupent n'ont pas généralement d'autre état.

Ces petits insectes sont sujets à des frequentes maladies; souvent ils détruisent ce long et pénible travail et privent l'éleveur de la récolte rêvée, et non seulement lui enlèvent un bénéfice bien mérité, mais encore lui font perdre tout l'argent qu'il a dépensé.

Il n'y a pas de filatures proprement dites en Chine; tout est filé sur un petit tour, et chaque famille dévide les cocons provenant de leur récolte personnelle. Les procédés de vente sont semblables à ceux que l'on emploie pour la "paquetaille" dans les Cévennes et en Italie, c'est-à-dire, on apporte la Soie sur les marchés, et les Chinois l'achètent en bloc, quitte à la trier chez eux en qualités No. 1, 2, etc. C'est seulement après ce triage qu'elle est revendue aux Européens.

Les principaux défauts de la Soie de Canton sont les irrégularités du brin, la quantité de duvet, qui sans doute provient des cocons satinés, et son peu d'élasticité. Les Chinois ne savent pas faire une Soie régulière; au lieu de fixer le titre en mettant à la bassine une quantité toujours égale de cocons, ils prennent à tout hazard une poignée, et la Soie s'en ressent naturellement. En filant au petit tour, il est difficile d'avoir un degré de chaleur égal, et comme les cocons placés dans une eau bouillante feraient trop de déchets, les Chinois tombent d'une extrême dans l'autre, et la Soie, n'étant pas filée au degré voulu, n'est pas assez cuite et perd de son élasticité. La récolte de Canton doit au moins s'élever à 45,000 balles, mais un peu plus d'un tiers seulement est exporté à l'état cru. La consommation de la Soie en Chine est énorme; en effet, tous les Chinois au-dessus de la basse classe portent des vêtements de Soie.

Il est difficile de donner en chiffres bien exactes, le produit de chaque récolte, car elle varie tous les ans, et l'exportation dépend surtout des prix payés par les étrangers. Pour l'Europe l'exportation est approximativement de—

1ère	récolte	1,500 balles.
2ème	„	2,000 „
3ème	„	3,500 „
4ème	„	4,000 „
5ème	„	3,000 „
6ème	„	1,500 „
7ème	„	500 „

Le moulinage et la manufacture des Soieries sont encore dans un état très primitif ici, quoique dans leur simplicité même on puisse voir tous les principes sur lesquels notre industrie a dû se baser pour arriver à sa perfection.

L'ouvrier chinois, pour faire une étoffe un peu compliquée, doit savoir par cœur les lisses qu'il a à lever, et il devient lui-même une vraie machine.

(Signé) ARNHOLD, KARBERG ET CIE.

KIUNGCHOW.

No. 92.

CUSTOM HOUSE,
KIUNGCHOW, *26th October* 1880.

SIR,

IN reply to your Circular No. 103, Second Series, regarding Silk culture in China I beg to furnish the following information:—

1°.—1°, the Raw Silk of Wênch'ang (文昌), a district situate on the north-east of Hainan, about 30 miles from Kiungchow, is produced from the worm fed with mulberry leaves (3 samples, Enclosure No. 1).

2°, so far as I can ascertain, there is no Silk produced in the districts with which the island of Hainan holds commercial intercourse.

2°.—The Wênch'ang Raw Silk is called Wênch'ang-ssŭ (文昌絲).

3°.—1°, the average production of Wênch'ang Silk is estimated at 280 piculs.

2°, 3°, and 4°, there is no Silk produced in Hainan from worms fed with ailanthus leaves, with oak-tree leaves, or on oak-trees, and there are no wild worms fed on mulberry trees.

4°, 5°, 6°, and 7°.—I am unable to give any information in reply to these queries.

8°.—1°, there is no Thrown Silk in Hainan.

2°, the probable production of Silk Piece Goods in this island is 2,000 pieces annually (6 samples, Enclosure No. 2).

9°, 10°, and 11°.—I am unable to give any information in reply to these queries.

Besides the above-mentioned Raw Silk and Silk Piece Goods, Silk fish-lines are exported from Kiungchow. They are said to be made from large caterpillars found on a tree grown in the interior of the island, which my predecessor in office, judging from the specimen of the leaves he obtained, considered was the *Liquidambar Formosana.* The average annual production amounts to 120 piculs, of which the greater part is shipped away, and is ultimately sent to Europe. I forward sample, Enclosure No. 3.

I also enclose two samples of the cocoon of the Wênch'ang silkworm, Enclosure No. 4.

One set of specimens have this day been sent, ready packed and numbered, to the Statistical Department, Shanghai.

I have, etc.,

A. LAY,
Assistant-in-Charge.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

PAKHOI.

No. 88.
I.G.

CUSTOM HOUSE,
PAKHOI, 15*th October* 1880.

SIR,

I HAVE the honour to acknowledge the receipt of your Circular No. 103, Second Series:

Silk culture in China: reports upon, called for.

It is with much regret that I have to report the failure of several attempts which I have made to obtain reliable information on the subject of your circular. Except a few coarse fabrics, used for clothing by the lower classes, there is no Silk to be found in Pakhoi, and I have not met with a single individual who has any knowledge of Silk. In July I commissioned a Native merchant, who was about to travel into the interior, to collect information and specimens, but, although he was to return in a few weeks, he has not yet made his appearance, and I can no longer put off replying to your circular.

Being absolutely without data, I will not attempt to answer the comprehensive questions, Nos. 1 to 11. I simply forward a few specimens of Silk produced in the vicinity of Pakhoi. Specimens Nos. 1 and 2 are cocoons from Ch'inchow (欽州), obtained from a mulberry tree worm. This cocoon is said to be the common one in Tungking and in the prefectures of Lien-chow, Nanning, etc. The Chinese give it no specific name. Specimens Nos. 3, 4, and 5 are three qualities of Piece Goods made from the cocoons (specimens Nos. 1 and 2). In Pakhoi, this manufacture is carried on in the form of a domestic industry, and the reeling is chiefly done by Annamese women, who have brought the art from their own country. It is needless to say that the implements used are of the most primitive character.

The next three, Nos, 6, 7, and 8, are specimens of Silk made from the cocoon of a worm which feeds on the leaves of the *Liquidambar*. This Silk is produced in Kaochow-fu (高州府), and is well suited, from its cheapness and durability, for making up into the rougher kinds of clothing.

As to the point raised in the fourth question, namely, the existence of silkworms fed on the camphor tree, I am told that such are indeed found in a wild state in this and neighbouring districts. The manner in which the Silk of this worm is utilised is singular. When the caterpillar has attained its full size, and is about to enter the pupa state, it is cut open and its Silk is extracted in a form strongly resembling catgut. This substance, having undergone a

process of hardening, becomes excellent fish-line, and as such is generally used here. Specimen No. 9 is a piece of fish-line extracted from the camphor-tree worm. It is said that the cocoons of this worm yield but little Silk, and that of a very inferior quality. SILK. PAKHOI.

These few particulars and specimens embrace all that I have been able to gather respecting the Silk industry in this and adjoining provinces. I trust that when you consider the total absence at Pakhoi of a basis for such an inquiry, the insufficiency of this reply to your circular will not surprise you.

No money has been spent in purchasing the specimens. In pursuance of your instructions, I now forward one set of specimens to the Inspectorate General, Peking, and one to the Statistical Department at Shanghai.

I have, etc.,

J. L. CHALMERS,
Assistant-in-Charge.

To

ROBERT HART, ESQUIRE,
Inspector General of Customs,
PEKING.

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